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理學博士 岡村金太郎著

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BY

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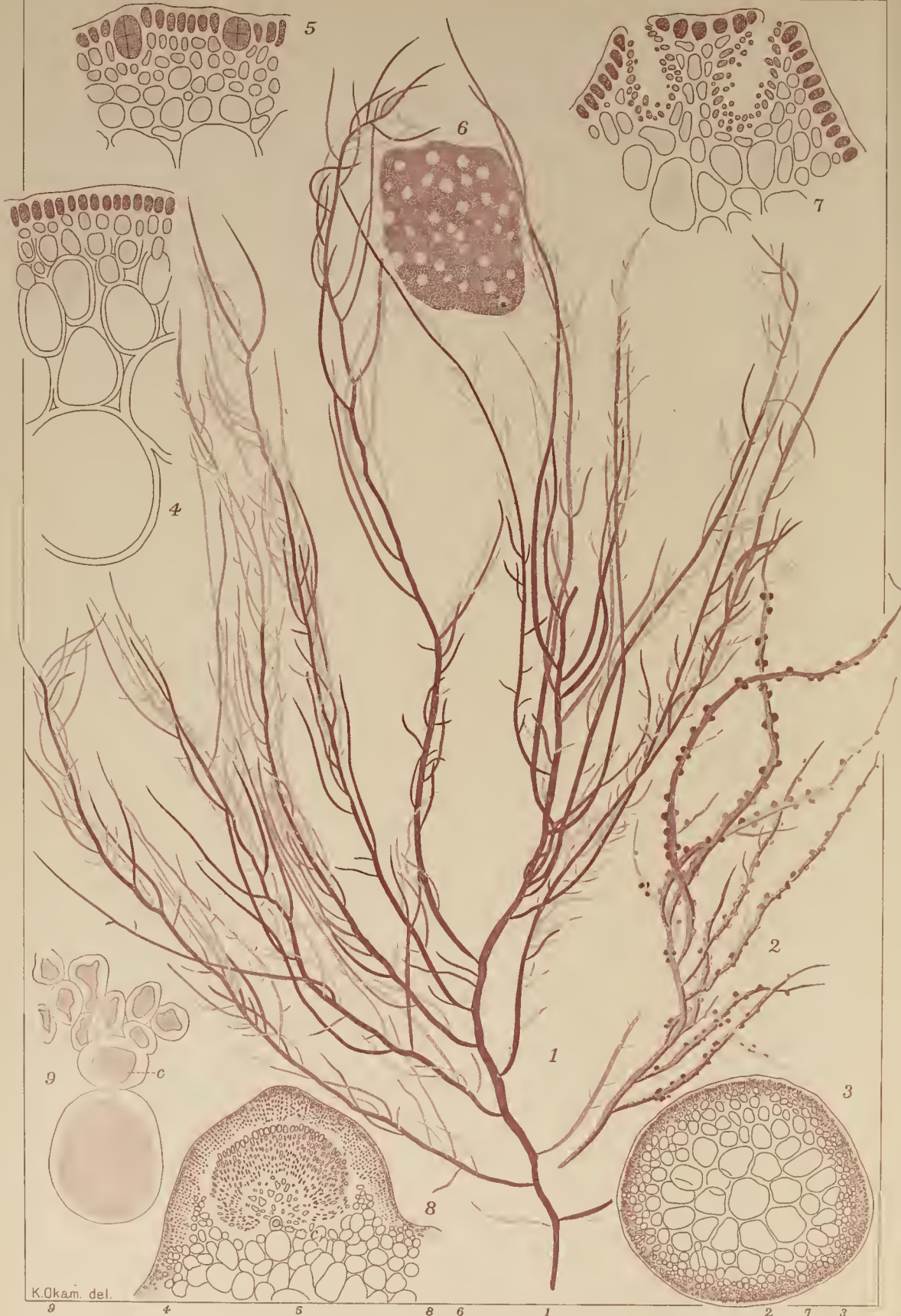
Corrigenda (訂正)

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K. Okam. del.

Gracilaria confervoides (L.) Grev. おごのり.

Gracilaria confervoides (L.) Grev.

Nom. Jap.: *Ogo-nori*.

PL. CLI.

Gracilaria confervoides (L.) Grev. *Alg. Brit.* p. 123; Harv. *Phyc. Brit.* t. 65; J. Ag. Sp. Alg. II, p. 587, *Epict.* p. 413; Thur. et Born. *Etude Phyc.* t. 40; Hauck *Meeresalg.* p. 182, f. 77; De Toni *Syll. Alg.* IV., p. 431.—*Fucus confervoides* L. *Turn. Hist.* t. 84.—*Sphaerococcus confervoides* Ag. *Kuetz. Tab. Phyc.* XVIII., t. 72, and many other specis.—? *Syn. Gracilaria flexuosa* Holmes *New Mar. Alg. fr. Japan* (Linn. Soc. *Journ., Bot.* Vol. XXXI, 1895) p. 253.

Fronde numerous rising from a small callous disk, filiform, cylindrical, slightly flexuose, 5–20 cm. but sometimes extending to 60 cm. in length, usually less than 1 mm. in diameter or sometimes 1.5–2 mm., laterally branched, but very variable in length, thickness and somewhat in ramification. Branches mostly elongated, gradually tapering toward apex, beset with similarly shaped but shorter ones of the second order which are loaded with mostly simple, longer or shorter ramuli. Branches arise alternately on all sides with mostly patent or erect axils, sometimes quite naked and flagelliform or sometimes one-sidedly arising; in some here and there subdichotomous ramification is observed. Branches of every order taper toward apex and slightly constricted at their bases.—*Tetraspores* densely scattered over surface of frond. *Cystocarps* abundantly produced on all sides of branches, often aggregated, hemispherical; placenta elevated and not lobed. *Antheridial* holes are densely formed over surface of frond. *Frond* internally consists of larger, roundish, somewhat thick-walled cells. *Colour* purplish-brown, greenish or yellowish becoming blackish in drying. *Sub-*

stance cartilaginous and the plant often imperfectly adheres to paper in drying.

Hab.: On rocks, stones, shells, gravels, sticks etc.; those on the rocks of open shore are smaller in forms and those growing in brackish water in sheltered places are often very long. Widely distributed within the boundary of our country.

Gracilaria flexuosa Holm. is found to be nothing but the present species by my study on a specimen kept in the herbarium of Tokyo Imperial Museum at Uyeno. It is not clearly mentioned as the duplicate of the specimen sent to Mr. Holmes by Mr. Saida, but it bears the same number (no. 75) as that of the specimen sent to him. The specimen was so badly prepared as to have flexuose and alternate habit and from this Mr. Holmes seems to have been mislead to rise it in a new species. I hope any one who has the convenience to study Holmes' specimen in question shall prove whether it is *Gracilaria confervoides* or not.

PL. CLI. Fig. 1: frond of *Gracilaria confervoides* (L.) Grev., $\frac{1}{1}$.—Fig. 2: portion of branch bearing cystocarps, $\frac{1}{1}$.—Fig. 3: cross-section of branch, $\frac{48}{1}$.—Fig. 4: portion of fig. 3, $\frac{220}{1}$.—Fig. 5: cortical layer bearing tetraspores, $\frac{220}{1}$.—Fig. 6: surface view of frond bearing antheridial holes, $\frac{83}{1}$.—Fig. 7: antheridial holes, $\frac{353}{1}$.—Fig. 8: vertical section of cystocarp; ϵ , central cell, $\frac{48}{1}$.—Fig. 9: central cell, ϵ , and cells of spore-filaments, $\frac{220}{1}$.

Gracilaria confervoides (L.) Grev.

お　ご　の　り

第 CLI 圖版

體ハ小サキ盤狀根ヨリ多數叢生シ、絲狀、圓柱狀、少シク雁木狀ニ屈曲シ、5-20 cm 長ク、時ニ 60 cm ニ超ユ、通常直經 1 mm

ヨリ細ケレドモ時ニ1-2mmナルコトアリ、側面ヨリ分岐ス、然レドモ長サ、太サ甚シク異ナリ分岐法モ亦幾分異ナルコトアリ。枝ハ概テ長ク、漸次頂端ノ方ニ細ク、同様ノ形狀ナル短キ枝ヲ以テ圍マレ、其枝ハ更ニ概テ單狀ニシテ長キ又ハ短キ小枝ヲ存ス。枝ハ各方面ニ互生シ、腋概テ廣開シ又ハ狹シ、時トシテハ全ク小枝ナクシテ長ク鞭狀ヲナシ、時トシテハ一方ノ側ニ偏生ス、又或標本ニテハ其處此處稍又狀ニ分岐スル所アリ。各部位ノ枝ハ枝端細ク基部クビレタリ。——四分胞子ハ密ニ體ノ表面ニ散在ス。囊果ハ枝ノ周圍ニ多數ニ生ジ、往々集合シ、半球狀ナリ；胎座ハ球狀ニ隆起シ其表面ニ凹凸ナシ。雄性器ノ窠ハ密ニ體ノ表面ニ存ス。——體ノ内部ハ大ナル圓キ稍厚キ膜ノ細胞ヨリ成リ、厚キ皮層ヲ以テ蔽ハル；皮層ノ細胞ハ内方ヨリ漸次外方ニ小ナリ。色ハ褐紫色、帶綠又ハ帶黃色ニシテ乾燥スルトキハ暗紫色又ハ暗褐色トナル。質ハ軟骨質ニシテ、體ハ紙ニ附着スルコト往々不充分ナリ。

產地：岩石、礫、介殼、木杭等ノ上ニ在リテ高潮線ヨリ潮線間ニ在リ；外海ニ面シタル磯ニアルモノハ體形概テ小ナレドモ灣内ノ如キ靜ニシテ淡水ノ多キ所ニアルモノハ往々甚シク長シ。體質ハ產地ニヨリ硬軟一ナラズ。邦内占守迄殆ド隨所ニ之ヲ産ス。朝鮮。

用途：食用トシ、糊料トシ又凍瓊脂用トシテてんぐさニ混用ス。

分布：太西洋(スカンヂナビアヨリ Tinginニ至ル；西印度)；地中海；喜望峰；南洋諸島。

備考：Holmes ガ伊豆下田ニテ齋田氏ノ採リタル *Gracilaria* ヲ *Gr. flexuosa* n. sp. トシテ發表シタルモノハ東京上野帝室博物館措葉室所藏標品ニ就テ予ノ調査スル所ヲ以テスレバ本種ニ外ナラズトス。該標品ニハ Holmes ニ送リタルモノナリトノ明

記ナケレドモ同氏ニ送リタルト同數ノ番號 (no. 75) ヲ附シアルヲ以テ多分同一品ノ副標品ナルベシト思惟ス. 同標品ハ製作甚不良ニシテ恰モ互生スル如ク成レル爲メ Holmes ハ誤リテ新種ト認メタルモノニハ非ルカ尙ホ他日ノ研究ヲ俟ツ.

第 CLII 圖版. 1: おこのり, *Gracilaria confervoides* (L.) Grev. ノ體, $\frac{1}{1}$.—2: 囊果ヲ有スル枝, $\frac{1}{1}$.—3: 枝ノ横斷面, $\frac{4.8}{1}$.—4: 同上ノ一部, $\frac{2.2.0}{1}$.—5: 四分胞子ヲ有スル皮部ノ一部, $\frac{2.2.0}{1}$.—6: 雄性器ノ孔アル體ノ表面, $\frac{3.3}{1}$.—7: 雄性器アル窠, $\frac{3.3.3}{1}$.—8: 囊果ノ縱斷; c, 中心細胞, $\frac{4.8}{1}$.—9: 中心細胞, c, ト胞子絲 (胎座ヲ組織スル一部) ノ細胞, $\frac{2.2.0}{1}$.

Spyridia elongata Okam. n. sp.

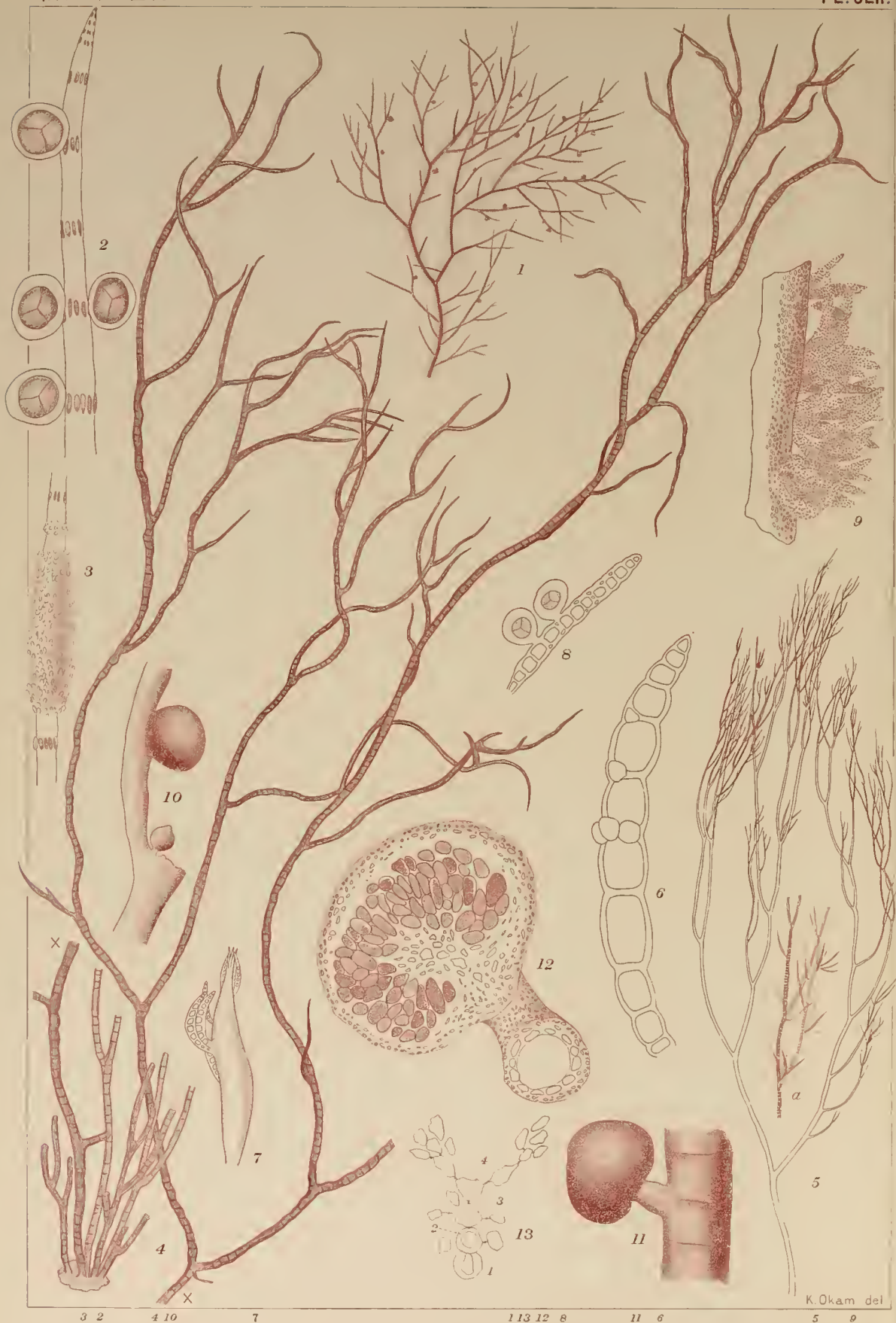
Nom. Jap.: *Naga-ubugé-gusa*.

PL. CLII, Fig. 4-13.

Diagn.: *Fronds* caespitose, filiform, cylindrical, elongated, subtorulose at thicker parts, deliquescently dichotomo-alternate, fastigiato-flaccid, with lower branches more distantly set, and upper ones closer and beset with somewhat fusiform ramuli which are scattered or fasciculately arising. Branches almost destituted of ramelli except in apical portions, where a few of them are present; they are short and articulated, sparingly provided with genicular cells. Articulations of branches throughly corticated, and as long as or little shorter as broad. Fertile ramelli short and densely tufted. *Tetraspores* few, formed on the sides of ramellus. *Antheridia* formed all around ramellus. *Cystocarps* globular, shortly pedicelled.

Hab.: Washed ashore. Enoshima, Bōshyu, Kadzusa, Hitachi. Fruits:—March to May.

Many fronds rising from a broad circular disc., 20-45 cm.



K. Okam. del.

Spyridia filamentosa (Wulf.) Harv. うぶげぐき Fig. 1-3.
Spyridia elongata Okam. sp. n. ふかうぶげぐき Fig. 4-13.

high, about 1–1.5 mm. thick at the basal portion, gradually tapering above; branches not constricted at base, thickish, much wrinkled after drying. Plant when young abundantly provided with elongated and flaccid branches, but becoming barren, when old, dropping off most of them. Ramelli are sparingly present; a few of them arise on all sides on the apical portion of young ramuli. They taper toward both ends, short, $375\text{--}475\ \mu$ long, slightly incurved, round at apex, poorly provided with a single row of a few roundish genicular cellules which are mostly present at the external side of nodes, or often wanting. Their articulations are slightly constricted at nodes and subaequal to or little longer than broad. The cortical layer surrounding the central axis is thick, and it is internally composed of a few layers of larger oblong cells which become gradually smaller outward. Fertile ramelli bearing tetraspores and antheridia are densely tufted and antheridial ramelli form small cushion-like whitish flecks along the inner side of branches and mostly in axils. Colour dull pinkish or brickish red, becoming paler in drying. *Substance* thick and soft-cartilaginous. In drying, the thicker portion of frond becomes very much wrinkled; plant becomes brittle, and does not adhere to paper.

PL. CLII. Fig. 4–13. Fig. 4: old barren fond of *Spyridia elongata* n. sp. The end marked with \times is to be connected to the part with the same mark, $\frac{1}{1}$.—Fig. 5: portion of young frond; *a*, portion of branch bearing fusiform ramuli; $\frac{1}{1}$.—Fig. 6: ramellus, $\frac{220}{1}$.—Fig. 7: apex of a ramulus showing sterile ramelli, $\frac{34}{1}$.—Fig. 8: tetrasporic ramellus, $\frac{20}{1}$.—Fig. 9: antheridial fleck, $\frac{37}{1}$.—Fig. 10: cystocarp, almost sessile, $\frac{12}{1}$.—Fig. 11: pedicelled cystocarp, $\frac{22}{1}$.—Fig. 12: vertical section of cystocarp, $\frac{48}{1}$.—Fig. 13: 1–4, cells of the central axis; from the cells, 1–3, pericarpial cells are produced; from the cell marked, 4, spore filaments are developed, $\frac{220}{1}$.

By the way I have here to give the illustrations of fructified portions of *Spyridia filamentosa* Harv., which I have missed when I illustrated that species in Vol. III, no. 1, Pl. CII., fig. 5-14.

Tetraspores are formed from genicular cells surrounding the joints of ramelli and one or two spores are observed at the same joint. Antheridial cells are formed from genicular cells of ramelli and afterward a dense cluster is formed by their confluenting together over many articulations. *Cystocarps* globular attached to the side of branches or branchlets, with a short and very slender pedicel.

PL. CLII, fig. 1-3. Fig. 1: frond bearing cystocarps of *Spyridia filamentosa* (Vulf.) Harv. 1.—Fig. 2: tetrasporic ramellus, $\frac{145}{1}$.—Fig. 3: antheridial fleck (from an American specimen), magd.

*Spyridia*¹⁾ *elongata* Okam. 新種

ながうぶげぐさ 岡村 稱

第 CLII 圖版, 4-13 圖.

性質: 體ハ叢生シ, 絲狀, 圓柱狀, 長ク, 太キ部分ハ稍念珠狀ニクビレ, 叉狀トモ互生トモナク漸次分岐シ, 枝ハ幾分直立スル如クニテ柔ク, 下部ノ枝ハ互ニ距リ上部ノ枝ハ密ニシテ兩端ニ稍細クナレル小枝ヲ存ス; 小枝ハ散在シ又ハ集リテ出ヅ. 枝ハ殆ド毛狀小枝(即チ短條小枝)ナク, 唯少シク頂端ニ之ヲ存ス; 毛狀小枝ハ短クシテ, 關節シ, 其節部ニハ僅ニ横ニ小細胞ヲ存ス. 枝ノ關節ハ全部皮層細胞ヲ以テ蔽ハレ, 太サト關節細胞ノ長サト殆ド相同ジク, 或ハ少シク短シ. 實ヲ有スル毛狀小枝ハ短クシテ密集ス. 四分胞子ハ僅ニ生ジ, 毛狀小枝

1) うぶげぐさ屬, *Spyridia* Harv., ノ性質ハ第三卷9頁ニ在リ.

ノ側面ニ着ク。雄性細胞ハ毛狀小枝ノ全周ニ生ズ。囊果ハ球狀ニシテ短柄ヲ有ス。

產地：海濱ニ打揚ゲラル(多分低潮線以下ニ産スルナルベシ)。相州江ノ島，房州，上總，常陸。果實：三月—五月。

體ハ多數廣キ圓盤狀根ヲ以テ立チ，20-45 cm 高ク，下部約 1-1.5 mm 太ク，漸次上方ニ細ク，枝ハ基部クビレズ，稍太ク，乾燥スルトキハ縦ニ皺ヲ生ズ。體ハ幼キ時ハ澤山ニ柔カキ長キ枝ヲ有スレドモ，老成スルトキハ枝ノ脱落スル爲メ裸トナル。毛狀小枝ハ僅ニ存シ，幼キ小枝ノ頂部ノ周圍ニ少シク之ヲ見ルベシ。毛狀小枝ハ兩端ニ細ク，短ク，長サ 375-475 μ アリ，少シク内方ニ屈曲シ，頂端圓ク，節部ノ小細胞ハ僅ニ之ヲ存ス；其小細胞ハ概テ節部ノ外側ニ生ジ或ハ往々之ヲ欠ク。毛狀小枝ノ關節ハ節部ニ於テ少シククビレ，太サト同ジ位若クハ少シク長シ。中軸ノ周圍ニ在ル皮層ハ厚クシテ其内層ハ大ナル長楕圓狀ノ細胞二三層ヨリ成リ外方ニ漸次小ナリ。——四分胞子及雄性細胞ヲ熟シタル毛狀小枝ハ密集シ，雄性細胞ヲ着ケタルモノハ小サキ低キ白色ノ隆マリヲ作リテ枝ノ内側ニ存シ概テ腋ノ所ニ多シ。色ハ淡赭色又ハ赤煉瓦色ニシテ乾燥スルトキハ幾分白色トナル。質ハ多肉ニシテ軟骨質ナレドモ軟弱ナリ。乾燥スルトキハ太キ部分ハ甚シク皺ヲナシ，體ハ脆クナリ，紙ニ附着セズ。

第 CIII 圖版，4-13 圖。4：ながうぶげぐさ，*Spyridia elongata*，新種，ノ老成セル枝少ナキ體；×印ノ部分ハ接續スベキ印ナリ， $\frac{1}{1}$ —5：幼キ體ノ一部；a，兩端細クナリタル小枝ヲ示ス， $\frac{1}{1}$ —6：毛狀小枝， $\frac{220}{1}$ —7：小枝ノ頂端ニ毛狀小枝ヲ生ズル狀， $\frac{34}{1}$ —8：四分胞子ヲ有スル毛狀小枝， $\frac{90}{1}$ —9：雄性器斑， $\frac{27}{1}$ —10：殆ド無柄ナル囊果， $\frac{12}{1}$ —11：短柄アル囊果， $\frac{90}{1}$ —12：囊果ノ縱斷面， $\frac{48}{1}$ —13：1-4，中軸細胞；1-3ノ細胞ヨリハ果皮ヲ形成スル細胞ヲ生ジ；4ノ細胞ヨリハ胞子ヲ形成スル胞子絲ヲ生ズ， $\frac{220}{1}$ 。

序ヲ以テ茲ニ *Spyridia filamentosa* (Wulf.) Harv., うぶげぐ

さノ實ヲ熟シタル部分ヲ説明セントス；此ハ曩ニ第三卷第CII圖版ニ載スベキヲ脱シタレバナリ。

四分胞子ハ毛狀小枝ノ節部ノ周圍ニアル皮層細胞ヨリ形成セラレ同一節ニ其一二胞子ヲ見ル。雄性細胞ハ毛狀小枝ノ節部ノ皮層細胞ヨリ形成セラレ、後多數ノモノ相集リテ密集シ班ヲナス。囊果ハ球狀ニシテ短キ細キ柄ヲ以テ枝又ハ枝ノ側面ニ着ク。

第CLII圖版, 1-3 圖. 1: うぶげぐさ, *Spyridia filamentosa* (Wulf.) Harv., ノ囊果ヲ有スル體ノ一部, $\frac{1}{10}$ —2: 四分胞子ヲ着ケタル毛狀小枝, $\frac{1.45}{1}$ —3: 雄性器理, (米國産標品ヨリ), 廓大。

Homoeostroma latifolium (Born.) J. Ag.

Nom. Jap.: *Haba-modoki*.

PL. CLIII.

Homoeostroma latifolium (Born.) J. Ag. Anal. Alg. Cont. III., p. 11; Saunders Phycol. Mem. p. 159, Pl. XXX.—*Punctaria latifolia* Bornet Etud. p. 13, Pl. V.—*P. latifolia* Grev. Hauck Meeresalg. p. 371, f. 158.

*Fronde*s caespitose, thin (172 μ thick) and leaf-like, 10–16 cm. long, 3–7 cm. broad, simple, narrow or broadly lanceolate, sometimes tapering toward apex, mostly blunt, much undulated, sometimes undulato-lobed, cuneate, ovate or cordate at base with very short stipe, densely scattered over surfaces with minute dark brownish dots. Frond is constructed of one sort of cells, rectangular in shape, that is the outer and inner cells are of equal size and shape and they are superposed one upon another mostly in 4, sometimes 5–6 layers. The lower portion of frond is thickened (360 μ thick) and consists of many more layers of cells. In fructified portion I have seen cortical and infracortical cells original-





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ly corresponding to the one of the inner layer to be divided into two or more. For example, fig. 10 shows such a section which has the sterile portion consisting of 2-3 layers of cells of equal size. *Zoosporangia* are spherical and isolated. *Gametangia* globular or slightly prominent. *Colour* light yellowish-olive. Plant pretty well adheres to paper in drying, but older ones not.

Hab.: Hirado (near Nagasaki); Provs. Ise, Mikawa, Noto, Sado; Goi (Prov. Kadzusa).

In fig. 2 I have illustrated small lanceolate fronds from material collected at Goi, in Tokyo Bay, among which there were many larger and broader and round-headed fronds.

PL. CLIII. Fig. 1: fronds of *Homæostroma latifolium* (Born.) J. Ag. (from Prov. Mikawa), $\frac{1}{1}$.—Fig. 2: fully grown smaller fronds in Tokyo bay (Goi, Prov. Kadzusa), $\frac{1}{1}$.—Fig. 3: cross-section of the lower thickened portion (same as fig. 1), $\frac{34}{1}$.—Fig. 4: middle portion of fig. 3 (360μ thick), $\frac{80}{1}$.—Fig. 5-6: different parts of the same cross-section of a frond, showing hairs in one of them, $\frac{353}{1}$.—Fig. 7: surface view of the sori o-gametangia, $\frac{48}{1}$.—Fig. 8: sorus of gametangia, magd., $\frac{220}{1}$.—Fig. 9: crossf section of frond bearing gametangial sori, $\frac{353}{1}$. (Fig. 5-9, from Goi in Tokyo Bay, March, 3, 1915).—Fig. 10: cross-section of frond bearing zoosporangia, (172μ thick, from Prov. Mikawa). (Fig. 1, 3-4, and 10, from Prov. Mikawa).

Homoeostroma J. Ag. 1896.

はいだまし屬

ENCCELIACEÆ ふのり科.

體ハ單條ニシテ葉狀, 中肋ナク, 内外同大同形ノ圓形—多角形ノ細胞ノ數層ヨリ成ル. 單複兩子囊ハ同一體ニ生ジ單獨又ハ群生シ, 表皮細胞ヨリ變ジ, 少シク外方ニ膨出又ハ突出ス.

此屬ノ植物ハ從來 *Punctaria* Grev. ノ中ニ包含セラレタレドモ體ノ構造ニヨリテ J. Agardh 氏ノ區別スル所トナリ該屬中ニ含マレタル數種ヲ該屬並ニ本屬ト *Nematophlea* J. Ag. トノ三屬ニ分レタリ。——屬ノ名ハ *Homoios* (同—ナル) ト *stroma* (層) トヨリ成ル。

Homoeostroma latifolium (Born.) J. Ag.

はいもどき 岡村 稱

第 CLIII 圖版.

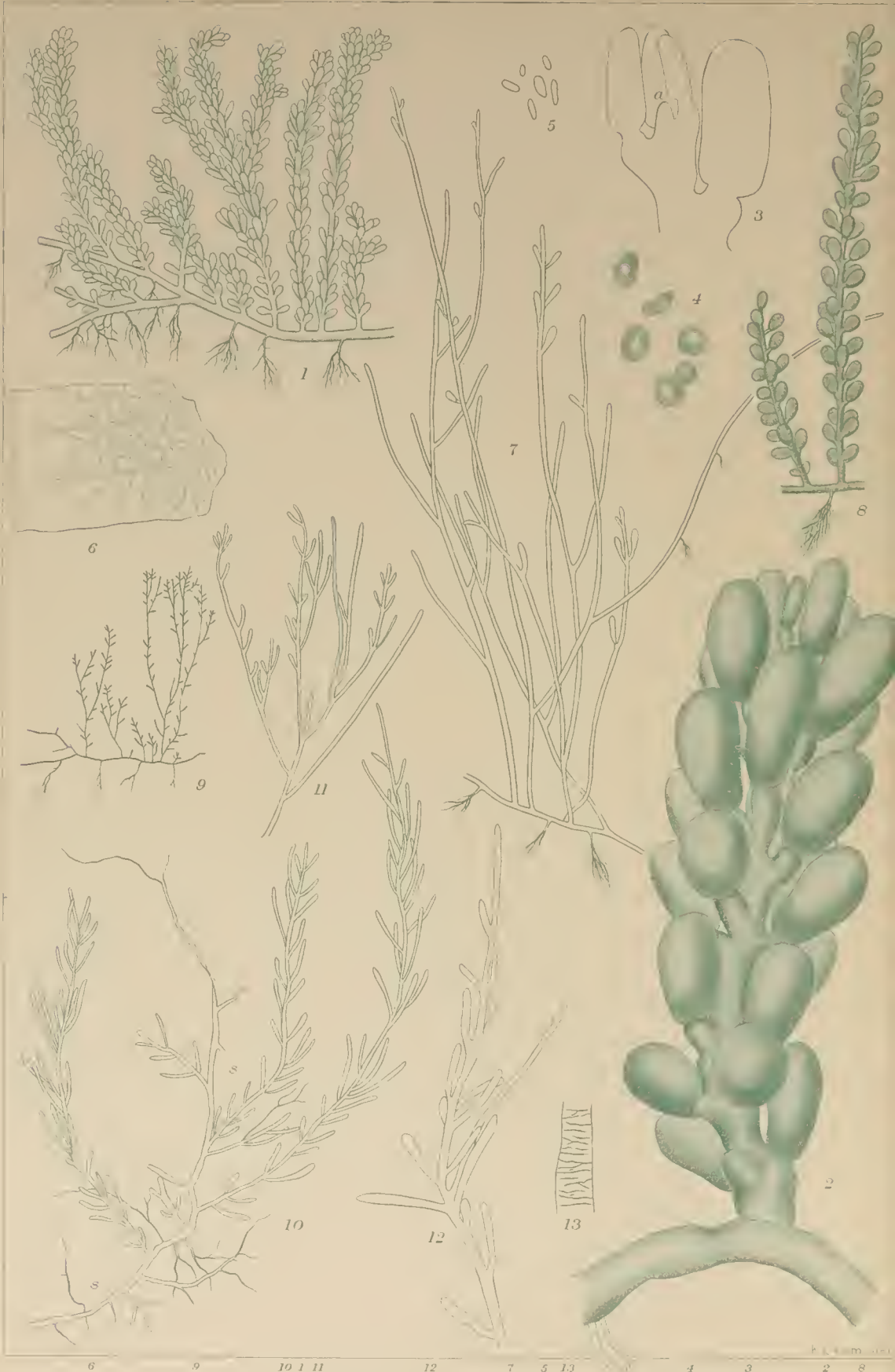
體ハ叢生シ、薄クシテ葉狀 (172μ)、單條、細キ又ハ廣キ披針狀ヲナシ、時トシテハ頂端ノ方ニ細ケレドモ概ネ鈍頭ニシテ甚シク波皺シ、時トシテハ波狀ヲナスコト強クシテ分裂ス、基部楔形、卵形又ハ心臟形ヲナシ、極メテ短キ柄ヲ有シ、高サ 10-16 cm、幅 3-7 cm アリ、全面ニ小サキ暗褐色ノ點々ヲ散布ス。體ハ通常4層ノ長方形ノ細胞ヨリ成リテ相重疊シ、時トシテハ5-6層アリ。體ノ下部ハ少シク厚クシテ (360μ) 數層ノ細胞ヨリ成ル。實ヲ有スル部分ニテハ予ハ上皮及皮下層ノ細胞二個若クハ二個以上ニ分レタルヲ見タリ；例ヘバ第10圖ノ實ナキ部分ハ同一ノ大キサナル 2-3 層ノ細胞ヨリ成リタリ。單子囊即チ游走子囊ハ球狀ニシテ單獨ニ存シ；ガメート囊即チ複子囊ハ同ジク球狀ニシテ少シク突出セリ。色ハ淡黃綠色ナリ。體ハ乾燥スルトキハ可ナリ能ク紙ニ附着スレドモ老成者ハ然ラズ。

產地：平戸、伊勢、三河、能登、佐渡、上總五井。

分布：太西洋及地中海、カリホルニヤ、太平洋。

備考：第二圖ニハ大正四年三月三日上總五井ニ澤山ニ漂流セル多數ノ幅廣キ長キ鈍頭ノ材料中ヨリ特ニ小形ノ披針狀ヲナセルモノヲ撰ミテ示シタリ。





Caulerpa Okamurai Weber v Bosse ふさいわづた Fig 1-8
Caulerpa fastigiata Mont けいわづた Fig 9-13

第 CLIII 圖版. 1: はゝだまし, Homoesoloma latifolium (Born.) J. Ag. (三河産), $\frac{1}{2}$ —2: 五井産ノ充分成熟セル小サキ體, $\frac{1}{2}$ —3: 第一圖ノ如キ體ノ下部ノ横斷面, $\frac{2.5}{1}$ —4: 第3圖ノ中央部 (360 μ 厚シ), $\frac{2.0}{1}$ —5-6: 同一ノ横斷面ノ二部; 其一ニモアツ, $\frac{2.5}{1}$ —7: 複子嚢群ヲ表面ヨリ見タルモノ, $\frac{1.0}{1}$ —8: 複子嚢群, $\frac{2.5}{1}$ —9: 複子嚢ヲ有スル體ノ横斷面, $\frac{2.5}{1}$. (59圖: 大正四年三月三日上總五井産)—10: 第一圖ノ如キ體ノ横斷面 (厚サ 172 μ) ニシテ單子嚢ヲ有スルモノ (三河産). (1, 3-4, 及 10 圖ハ三河産).

Caulerpa Okamurai Weber-van Bosse.

Nom. Jap.: *Fusa-ivadzuta*.

PL. CLIV, Fig. 1-8.

Caulerpa Okamurai Weber-v. Bos. in Okam. Alg. fr. Ogasawarā-jima (Bot. Mag. Tokyo, Vol. XI, No. 119), p. 5, Pl. I, f. 13-14; Weber-v. Bos. Monogr. Caul. p. 385, Pl. XXXIV, fig. 9; Okam. Alg. Jap. Exsic. Fasc. I, no. 48.

“*Fronds* arise from surculus, often two near together, and are cylindrical, being simple, or branching irregularly once or twice. They attain a height of 4-17 cm., being as thick as the surculus and are clothed throughout their whole length with more or less densely imbricated ramenta. Ramenta are apparently imbricated in densely clothed fronds, while in loosely inserted ones they appear as if distichous and opposite. The latter disposition of ramenta is more generally the case in those standing near the base of frond, where ramenta are as a rule loosely inserted; they are gradually imbricated and become closer as they proceed upward. Rachis is slightly constricted at the insertion of ramenta and somewhat bulges out laterally beneath the constriction, giving rise to a short pedicel on which a ramentum is situated. The junction of a ramentum and a pedicel is more distinctly constricted

than the constriction of the rachis. The form of ramenta varies in several fronds. Basal ones are generally shorter than the upper and they are obovate, while the upper ones are oblong or sub-clavato-cylindrical, their apical portion being a little thicker than their basal portion. They attain a length of 2–5 mm. being ca. 1.5 mm. thick, that is subequal to diameter of the rachis. *Color* of plant is grass-green, which is well preserved in drying, or in older fronds it fades to a dull straw color. *Substance* is soft and the plant imperfectly adheres to paper in drying.”—Okam. *l. c.*

Hab.: On rocks covered with sand, near low tide. Nomo (near Nagasaki), Amakusa-jima, Provs. Kii, Suruga, Mikawa, Sagami, Bōshyu, Hitachi, Iwaki, Noto and Ugo.

Geogr. area: Ponape and Truck.

f. **oligophylla** Okam. n. f. Pl. CLIV., Eig. 7.

Syn.? *Caulerpa tateyamensis* Yendo Three New Mar. Alg. fr. Japan. (Bot. Mag. Tokyo, Vol. XVII, p. 99, Pl. III, f. 1–3).

Fronds much elongated, often 15 cm. long or more, irregularly branched; ramenta almost none or very few present, sometimes here and there a little imbricated which are pedicelled as the type species or sessile.

The present plant is evidently an aberrant form of *C. Okamurai*, as is shown by the nature of ramenta. It is abundantly obtained by trawling in the water 2–3 fathoms deep at Bay of Tateyama, Prov. Bōshyu, where the type-form is also observed. Mr. Yendo described a *Caulerpa* from the same locality as a new sp., *C. Tateyamensis*, which is probably same as the form here mentioned, though I am not able to see his specimen.

PL. CLIV, fig. 1–8. Fig. 1: frond of *Caulerpa Okamurai* Weber-v. Bos. $\frac{1}{1}$.—Fig. 2: portion of frond, $\frac{7}{1}$.—Fig. 3: growing apex, *a*, $\frac{1^3}{1}$.—Fig.

4: chromatophore including pyrenoid, $\frac{567}{1}$.—Fig. 5: starch grains, $\frac{567}{1}$.—Fig. 6: strands of cell-membrane, $\frac{220}{1}$.—Fig. 7: frond of *f. oligophylla* Okam. n.f., $\frac{1}{1}$.—Fig. 8: frond of *C. Okamurai* bearing larger and loosely set obovoid ramenta, $\frac{1}{1}$.

Caulerpa Okamurai Weben-van Bosse.

ふさいわづた 岡村 稱

第 CLIV 圖版, 1-8 圖.

體ハ匍匐莖ヨリ往々二個相接シテ立チ、圓柱狀、單狀又ハ一二回不規則ニ分岐ス、高サ4-17 cm ニシテ略匍匐莖ト同様ニ太ク、全部ニ「ラメンタ」即チ葉ヲ有ス。葉ハ多少密ニ覆瓦様ニ生ジ、或ハ密ニ或ハ疎ニ、或ハ下部ニ疎ニシテ上部ニ密ナルアリ、各方面ニ出ルヲ規則トスレドモ時ニ兩側ニ立チテ對生ノ如クナルアリ、殊ニ體ノ下部ニアルモノニ於テ疎ナリトス、而シテ軸即チ枝ハ「ラメンタ」ノ附着スル部分ニ於テ少シククビレテ側面ニ膨出シ以テ「ラメンタ」ノ柄トナルヲ以テ「ラメンタ」ハ恰モ柄ト接スル所ニ於テ輕ク緊約セラレタルガ如ク成レリ。葉即チ「ラメンタ」ノ形狀大小ハ體ニヨリテ變化シ、倒卵形、又ハ棍棒狀ヲナシ體ノ下部ノモノ概ネ短クシテ上部ノモノハ長ク、長橢圓形又ハ棍棒—圓柱狀ナルアリ；其長サハ2-5 mm ニシテ太サ約1.5 mm 或ハ2 mm ニ達ス。色ハ青綠色、老成スルトキハ藁色トナル。質ハ柔クシテ、乾燥スルトキハ紙ニ附着セズ。

產地：砂ヲ以テ蔽ハレタル低潮線以下ノ岩石上ニ在リ。野母、天草島、紀伊、駿河、三河、相模、安房、常陸、磐城、能登、羽後。

分布：ポナベ及トラツク島。

f. *oligophylla* Okam. 新品種 第 CLIV 圖版, 7 圖.

體ハ長ク往々 15 mm 以上ニ達シ, 不規則ニ分歧ス; 葉ハ全ク缺如シ又ハ僅ニ存シ, 時ニ其處此處ニ僅ニ覆瓦様ヲナシ, 原種同様ノ柄ヲ有スルアリ又柄ヲ有セザルアリ.

本品ガ明ニ原種ノ變形品ナルコトハ「ラメンタ」ノ性質之ヲ證シテ餘リアリト云フベシ. 本品ハ房州館山灣ニ於テ 2-3 尋ノ海底ヨリ揚操網ニテ澤山ニ得ラル; 館山灣ニハ又原種モ乏シトセズ. 遠藤氏ハ杉山氏ノ同所ヨリ得タル *Caulerpa* ヲ C. *Tateyamensis* ト云ヘル新種トシタレドモ多分ハ茲ニ記シタル品種ナルベシト思惟ス; 予ハ氏ノ標品ヲ見ルヲ得ザルヲ以テ之ヲ斷言スル能ハズ, 唯氏ノ說ヲ俟ツノミ.

第 CLIV 圖版, 1-8 圖. 1: ふさいわづた, *Caulerpa* Okamurai Weber-v. Bos. ノ體, $\frac{1}{10}$. 2: 體ノ一部, $\frac{1}{10}$. 3: 成長點, a, $\frac{1.5}{1}$. 4: 「ピレノイド」ヲ包含セル色素體, $\frac{5.67}{1}$. 5: 澱粉粒, $\frac{5.67}{1}$. 6: 細胞膜ヨリ起リテ體內ヲ走ル絲, $\frac{22.0}{1}$. 7: f. *oligophylla* Okam. n. f. ノ體, $\frac{1}{10}$. 8: 大ナル倒卵形ノ葉ヲ疎ニ着ケタル原種ノ體ノ一部, $\frac{1}{10}$.

Caulerpa fastigiata Mont.

Nom. Jap.: *Ki-iwadzuta*.

PL. CLIV, Fig. 9-13.

C. fastigiata Mont. *Flora Cuba* Pl. 2, fig. 3; J. Ag. Till Alg. Syst. p. 5; Weber-v. Bos. Monogr. Caul. p. 262, Pl. XX., f. 1-2; Vickers Phyc. Barbadosensis tab. 36; Börges. Some Chlorophyc. from the Dan. W. Ind. (Bot. Tidsskr. 31 Bd., p. 127; Reinke Ueb. Caul. p. 6, f. 1-2; De Toni Syll. 1., p. 442.—*Herpochaeta fastigiata* Mont. Ann. d. Sc. Nat. 2me. Ser. Vol. 20, p. 305; Kuetz. Tab. Phyc. VI, t. 1.

Fronds with naked and slender surculus sending root-fibres below and aerial shoots upwards. Aerial shoots simple, sub-dichotomous or alternately branched, fastigiate, ca. 3 cm. high, loaded with sometimes many and closely set, sometimes few and scattered ramuli which are opposite, alternate or subverticillate standing in different directions; they are longer or shorter, usually cylindrical or slightly swollen toward the obtuse apex. All the parts are slender and there is no difference in thickness between surculus and erect branches.

Hab.: Ishigaki-jima (Ryukyu; leg. M. Tago).

In our plant the upper half of aërial shoots is more intensely colored as Mr. Börgesen and Mme. Weber van Bosse already stated.

PL. CLIV, fig. 9-13. Fig. 9: frond of *Caulerpa fastigiata* Mont., isolated, $\frac{1}{1}$.—Fig. 10: portion of frond, $\frac{1}{1}$.—Fig. 11: upper portion of aerial shoot, $\frac{7}{1}$.—Fig. 12: branch, $\frac{13}{1}$.—Fig. 13: strands of cell-membrane, $\frac{48}{1}$.

Caulerpa fastigiata Mont.

けいわづた 岡村稱

第 CLIV 圖版, 9-13 圖.

體ハ纖細ニシテ裸出セル匍匐莖ヲ有シ, 上方ニ直立スル體ヲ出シ下方ニ根ヲ生ズ; 直立スル體ハ單條, 稍叉狀又ハ互生ニ分岐シ, 枝ハ上方ニ向ヒ, 約 3 cm 高ク, 小枝ヲ存ス; 小枝ハ時ニ多クシテ密ニ, 時ニ寡ナクシテ散在シ, 互生シ對生シ又ハ同一ノ所ヨリ各方面ニ多數ニ出ヅ; 而シテ長ク又ハ短ク, 通常圓柱狀又ハ頂端ノ方ニ少シク太ク成レリ. 各部ハ纖細ニシテ枝ト匍匐莖ト太サニ於テ大差ナシ.

產地: 琉球石垣島 (多湖氏送ル).

分布: 西印度; ブラジル, 南洋諸島.

Börgesen 氏竝ニウエーバー女史ノ既ニ氣付キタル如ク直立スル部分ノ上半部ハ濃厚ナル色素ヲ含メリ；此ハ此植物ノ密ニ叢生スルヨリ自然上半部ノミ日光ニ浴スルコト充分ナルガ爲メナリト Börgesen 氏ハ論ゼリ，蓋シ然ラン。又 Reinke 氏ノ云ヘル如ク本種ハ *Caulerpa* 中ノ最下等ノモノト云フベシ；其ハ各部皆同様ニシテ各部ノ分化最モ低ク枝モ亦往々匍枝トナルコトヲ得レバナリ。

第 CLIV 圖版，9-13 圖。9: けいわづた，*Caulerpa fastigiata* Mont. ノ體チ一個分離シタルモノ， $\frac{1}{1}$ —10: 體ノ一部， $\frac{2}{1}$ —11: 直立スル體ノ上部， $\frac{3}{1}$ —12: 枝， $\frac{4}{1}$ —13: 細胞膜ヨリ起リテ體內ヲ走ル絲， $\frac{4.5}{1}$ 。

Caulerpa cupressoides Ag. var. *lycopodium*

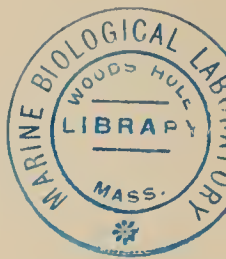
f. *amicorum* Weber-van Bosse.

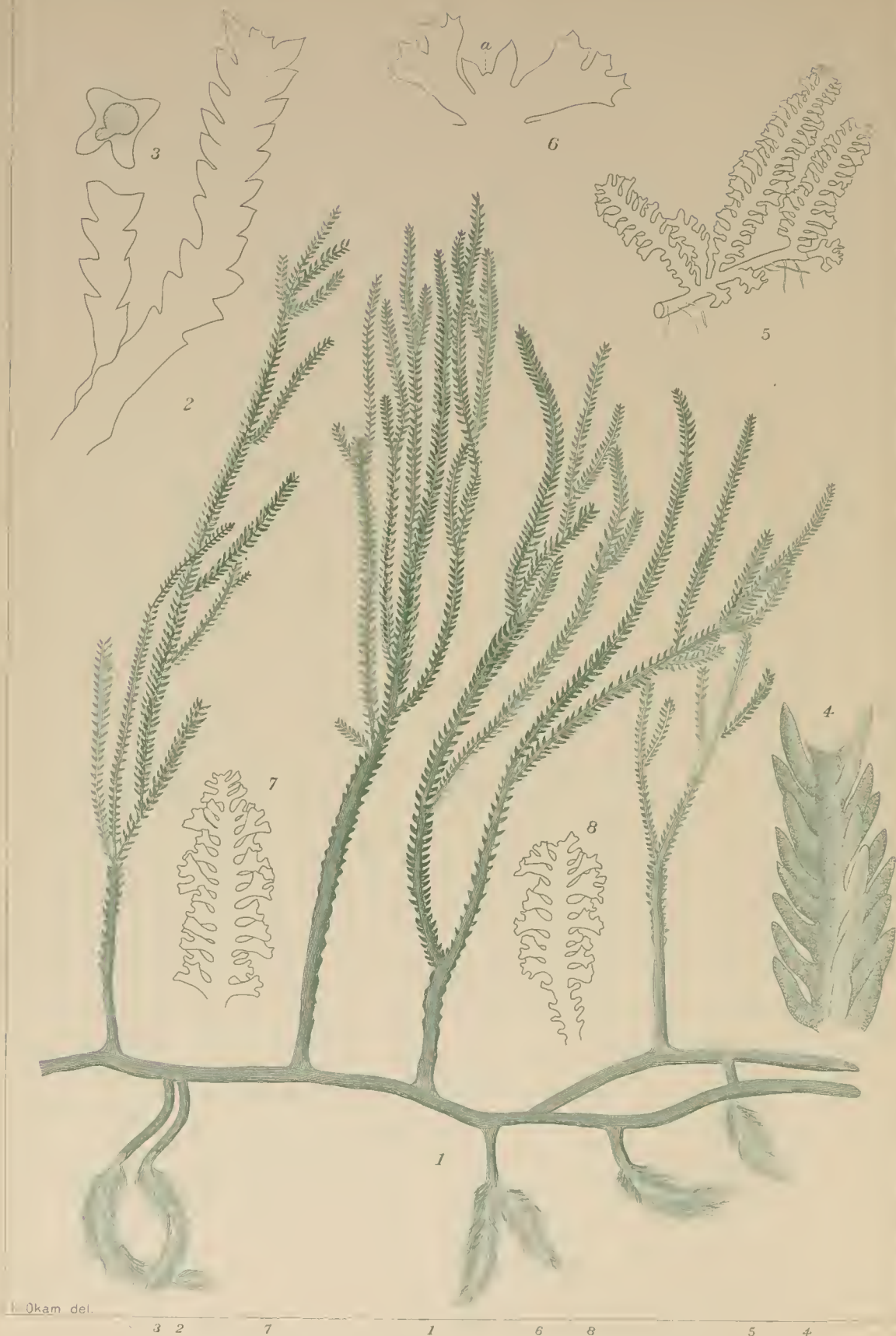
Nom. Jap.: *Biakushin-dzuta*.

PL. CLV, Fig. 1-3.

C. cupressoides Ag. var. *lycopodium* f. *amicorum* Weber-van Bosse Monogr. *Caulerpa* p. 337, Pl. XXVII, fig. 12, Pl. XXVIII, f. 10-12.—*C. amicum* Harv. Proc. Amer. Acad. Vol. IV, 1869.

Plant large and robust with thick and glabrous surculus (ca. 2-3 mm. in diameter). Aerial shoot erect, 10-15 cm. high, naked and cylindrical below for longer or shorter distance appearing like stipe, loosely branched in alternate or sometimes subfasciculate manner, standing on narrow or patent axils, densely covered with subulate, incurved patent and subcylindrical ramenta arranged in 2-4-5 rows generally 2-2.5 times as long as the diameter of rachis, while those at the base of shoot shorter and conical. Plant becomes stiff in drying and does not adhere to paper.





Caulerpa cupressoides Ag. var. *lycopodium*
f. *amicum* Weber-van Bosse びやくしんづた Fig. 1-4.

Caulerpa Webbiana f. *disticha* Weber-van Bosse こけいわづたノ一品種 Fig. 5-8.

Hab.: On muddy bottom at 4 fathoms; Ushibuka (Prov. Higo); Ryukyu.

PL. CLV, fig. 1-4. Fig. 1: portion of frond of *Caulerpa cupressoides* Ag. var. *lycopodium* f. *amicorum* Web.-v. Bosse, $\frac{1}{1}$.—Fig. 2: lower portion of frond, $\frac{3}{1}$.—Fig. 3: cross-section of branch, $\frac{3}{1}$.—Fig. 4: middle portion of branch, $\frac{3}{1}$.

Caulerpa cupressoides Ag. var. *lycopodium*

f. *amicorum* Weber-van Bosse

びやくしんづた 黒岩稱

第 CLV 圖版, 1-3 圖.

體ハ大ニシテ強ク、太クシテ滑ナル匍匐莖ヲ存ス、其直徑約 2-3 mm アリ。直上體ハ 10-15 cm 高ク、下部或距離ノ間小枝ナク圓柱狀ニシテ柄ノ如キ觀ヲ呈シ、上部ハ疎ニ互生又ハ時ニ稍束狀ニ分岐シ、腋狹ク或ハ廣ク、密ニ「ラメンタ」ヲ以テ圍繞セラル;「ラメンタ」ハ頂端尖リ内方ニ屈曲シ、廣開シ、略圓柱狀ニシテ枝ノ周圍ニ 2-4-5 列ニ出デ、概シテ枝ノ軸ノ太サノ 2-2.5 倍長シ、然レドモ體ノ下部ノ方ノモノハ短クシテ圓錐狀ナリ。體ハ乾燥スルトキハ硬ク成リテ紙ニ附着セズ。

產地: 4 尋ノ泥多キ海底ニ匍匐ス(牛深); 天草島牛深, 琉球。

第 CLV 圖版, 1-4 圖. 1: びやくしんづた, *Caulerpa cupressoides* Ag. var. *lycopodium* f. *amicorum* Web.-v. Bos., $\frac{1}{1}$.—2: 體ノ下部, $\frac{3}{1}$.—3: 枝ノ横断面, $\frac{3}{1}$.—4: 枝ノ中央部, $\frac{3}{1}$.

Caulerpa Webbiana Mont.

f. *disticha* Weber-van Bosse.

PL. CLV, Fig. 5-8.

C. Webbiana Mont. f. *disticha* Web.-v Bos. Monogr. Caul. p. 270, Pl.

XXI, f. 1; Børgesen An Ecol. and System. acc. of the Danish W. Ind. (Mem. Aad. Roy. d. Sc. etc.) 1907, p. 357, f. 4.

Fronds small with erect shoots bearing distichous rows of opposite ramenta, 5-10-13 mm. long. Our specimens being dried and pressed the compressed habit of frond is not clear; but ramenta are compressed with the flat surface on the same plane with that of shoot. Ramenta are wedge-shaped with the broadest end turned outward, and several times dichotomously divided ending in a small spine, very widely parted; the broadest distance between the extremities of ramenta on both sides is 1-1.8 mm. The erect shoots show a very distinctly rhythmical growth of ramenta, as Børgesen states; thus every set of 3 or 4, sometimes 5 or 6 continuous pairs of ramenta gradually decrease in lengths from below upward, alternating in a regular sequence.

Hab.: Ogasawara-jima (col. Fujimori).

PL. CLV, fig. 5-8. Fig. 5: frond of *Caulerpa Webbiana* Mont. f. *disticha* Web.-v. Bos., $\frac{1}{10}$.—Fig. 6: growing apex of aerial shoot, $\frac{4.8}{1}$.—Fig. 7-8: two aerial shoots showing rhythmic growth of ramenta, $\frac{1.3}{1}$.

Caulerpa Webbiana Mont. f. **disticha** Weber-van Bosse¹⁾

こけいわづだノ一品種

第 CLV 圖版, 5-8 圖.

體ハ小ニシテ, 5-10-13 mm 長ク, 直立スル體ハ對生スル「ラメンタ」ヲ左右二列ニ着ク. 予ノ標品ハ乾燥品ナルヲ以テ其鮮時ノ性質ヲ明カニスル能ハザレドモ, 體ハ乾燥品ニテハ扁平ニシテ「ラメンタ」モ亦扁ク其面ハ軸ト同一ノ面上ニアリ.

第三卷 70 頁第 CXIX 圖版, 6-9 圖ニこけいわづだアリ.

「ラメンタ」ハ楔形ニシテ頂端ノ方ニ廣ク、數回叉狀ニ分岐シ各小サキ刺ヲ以テ終リ、甚シク廣開ス；而シテ兩側ノ「ラメンタ」ノ兩末端ノ距離ハ1-1.8 mmナリ。直立スル體ニ於テハ Börgesen 氏ノ云ヘル如ク「ラメンタ」ノ成長ニ就テ旋律的步調ヲ認ムルヲ得ベシ；即チ各3, 4, 時ニ5, 6個ノ相連ナレル對ハ一組ツ、規則正シク相繼ギテ交互ニ下ヨリ上ノ方ニ短クナレリ。此現象ニ就テ氏ハ之ヲ其地ノ季候ノ關係ヨリスト論ジ、其最長ノ伸長ヲナスハ西印度ノモノニアリテハ六月ナリト云フ；蓋シ其月ハ太陽直上ニアリテ日光ノ影響スル所最多ケレバナリト。

產地：小笠原島（藤森採）。

分布：西印度，ペルナンブーコー，カナリー島，紅海，フレンジー島，日本。

第 C1.V 圖版，5-8 圖 5: *Caulerpa Webbiana* Mont. f. *disticha* Web.-v. Pos., ノ體， $\frac{10}{1}$ —6: 體ノ成長端， $\frac{4.8}{1}$ —7-8: 「ラメンタ」ノ旋律的成長ヲ示ス二條ノ枝， $\frac{1.2}{1}$ 。





HELMINTHOCLADIA AUSTRALIS HARV. べにもづく



Odonthalia semicostata (Mert.) J. Ag. Fig. 1-6.

Helminthocladia australis Harv べにもづく Fig. 7-21.

Helminthocladia australis Harv.

Nom. Jap.: *Beni-modzuku*.

PL. CLVI—CLVII, Fig. 7-21.

Helminthocladia australis Harv. Phyc. Austr. V, tab. 272; J. Ag. Epicr. p. 506; Id. Till Alg. Syst. XI, p. 39; De Toni Phyc. Jap. Nov. p. 20; Id. Syll. Alg. IV, p. 83.

Root a small fleshy disc. *Fronds* caespitose, cylindrical, sometimes compressed or irregularly rugulose longitudinally in very robust frond, with main stem attaining a breadth of 10-15 mm in broader compressed portion, 15-45 cm long, tapering at base for a short distance like stem, soon thickening into a diameter of 2-4 mm in the middle portion and thence upward gradually attenuating. Main stem mostly simple or once or twice forked or parted, closely set throughout its whole length with widely patent branches, half as thick as main stem, with longer or shorter ones mixed. Branches worm-like, usually not attenuated at base, tapering to a slender apex, either quite simple or once or twice irregularly branched, and furnished with lateral simple or forked branchlets. Branchlets are sometimes very short, much slender and densely arising, often curled as shown in the lower portion of PL. CLVI.

Plant is dioecious. Antheridia are produced from the terminal cells of the peripheral moniliform filaments. *Procarps* consisting of 3-5 cells are formed as a lateral branch of peripheral filaments near their bases. *Cystocarps* situated among the peripheral filaments consisting of a globular mass of spores. Tetraspores unknown. *Color* vinoso-red or purple, soon fading to brick-red in freshwater. *Substance* gelatinoso-cartilaginous, tough and elastic, very soft and

lubricous. In drying the plant closely adheres to paper.

Hab.: On rocks or stones between tide marks extending to low tide. (4-11 fath.) Pacific coast from Kagoshima to Matsu-shima (Prov. Rikuzen), and Prov. Idzumo, Tango and Noto. Chip-pen (Chosen). Fruits: Spring—early summer.

Harvey in *l. c.* remarks under *Helminthocladia australis* "My only doubt respecting it is, lest it should not be sufficiently distinct specifically from *H. purpurea* itself, which is a very variable plant, and to some of whose varieties our plant bears considerable resemblance. In general, there is more difference in diameter between the main stem and its branches in the European [*H. purpurea*] than in the Australian plant [*H. australis*]." According to his opinion I refer the present plant to *H. australis*. It would be proved, however, in other days, to be natural to unite the two related plants in one and the same species. A form having much slender branchlets, as shown in the lower portion of PL. CLVI, I think to be a form stunted from the cause of its localities where terminal flow of cold current visits.

PL. CLVI. Fully grown frond of *Helminthocladia australis* Harv.; below with a portion of frond having much shorter and slender ramuli, 1/1.

PL. CLVII, fig. 7-21. Fig. 7: longitudinal section of frond, $\frac{13}{1}$.—Fig 8: peripheral filaments bearing a procarp, $\frac{220}{1}$.—Fig. 9: young peripheral filament bearing a hair, h , $\frac{220}{1}$.—Fig. 10: antheridia, $\frac{220}{1}$.—Fig. 11-15: different forms of procarps, $\frac{336}{1}$.—Fig. 16: procarp (*a-d*) producing spore-filaments (*e f* and *g h*), $\frac{336}{1}$.—Fig. 17-19: beginning of cystocarp-formation, $\frac{336}{1}$.—Fig. 20: portion of young spore-filaments, $\frac{597}{1}$.—Fig. 21: young spores, $\frac{567}{1}$.

Helminthocladia J. Ag.

べにもづく属

HELMINTHOCLADIACEAE. べにもづく科.

體ハ側面ヨリ分岐シ、二層ヨリ成リ、髓層ハ縱走セル絲ニシテ緩ク錯綜シ、各方面ニ數回叉狀ニ分岐セル絲ヲ出シ、其上部念珠狀ニ連ナレルモノ相集リテ外層ヲナシ、最末端ノ細胞最モ大ナリ。成長點ハ扇狀ニ射出セル絲ヨリ成ル。——四分胞子ハ知ラレズ。胎原列ハ三個細胞ヨリ成リ外層ノ絲ノ側面ニ着ク。仁ハ成胞絲ノ半球狀ニ密集セル團塊ヨリ成リ、成胞絲ハ無數ノ細キ、束狀ニ分岐セル絲ニシテ其末端ノ細胞ヨリ順次胞子トナル；而シテ仁ヲ支フル柄ハ短クシテ附屬物ナク此柄ヨリ上方ニ射出シテ分岐セル枝ハ萼ノ如クナリテ仁ヲ包圍ス。

太西洋及太平洋暖部ニ約四種アリ。——屬ノ名ハ Helmins(蠕蟲)ト Clados(枝)トヨリ成ル。

Helminthocladia australis Harv.

べにもづく 岡村 稱

HELMINTHOCLADIACEAE べにもづく科.

根ハ小盤狀ニシテ多肉。體ハ叢生シ、圓柱狀、時ニ扁壓シ又ハ極メテ太キモノニアリテハ縱ニ不規則ニ小皺ヲ存ス、其幅廣キ扁壓セル部分ハ 10-15 mm ニ達シ、高サ 15-45 cm ニシテ、體ノ下部ハ少距離ノ間細クナリ、中央部ニテハ 2-4 mm ノ直徑ヲ有シ、夫ヨリ上部ハ漸次細長トナル。主軸ハ概ネ單條又ハ一二回分叉シ其全部ニ密ニ枝ヲ存ス；枝ハ廣開シ、主軸ノ半分許太ク、長短混在ス、而シテ蠕蟲狀ニシテ大抵基部細カラズ、上端細クシテ全ク單條又ハ一二回不規則ニ枝ヲ分チ、更ニ單條

又ハ分又セル側枝ヲ存スルヲ常トス。小枝ハ時トシテ甚シク短ク又甚細クシテ密ニ生ジ、往々縮レタルコトアリ、第CLVI圖版ノ下部ニ示スモノ是ナリ。——雌雄異株。精子器ハ外層ノ念珠狀絲ノ頂細胞ヨリ形成セラル。胎原列ハ3-5個ノ細胞ヨリ成リ外層ノ絲ノ基部ニ近ク其枝トシテ形成セラル。囊果ハ果胞子ノ球狀ヲナセル團塊ヨリ成リテ外層ノ絲ノ中ニ埋マル。四分胞子ハ詳ナラズ。色ハ紫紅色ニシテ淡水ニ入ルレバ忽チ淡紅色ニ變ス。質ハ粘滑ニシテ軟骨質様、稍強韌ニシテ弾力性アリ、極メテ軟カナリ。乾燥スルトキハ密ニ紙ニ附着ス。

產地：潮線間ヨリ低潮線ニ亙リテ岩石ニ附着ス(4-II 尋)；鹿兒島ヨリ松島ニ至ル大平洋岸並ニ出雲、丹後、能登ニ產ス。竹邊(朝鮮、松野氏)。果實：春季—初夏。

分布：西部ニウフホルランド。

本植物ハ元來濠洲ノ產ニシテ歐洲ニ產スル *H. purpurea* ト酷似シ、兩者ノ區別ニ就テハ既ニ Harvey 氏ガ此種ヲ記載スルニ當テ下ノ如ク述タリ；即チ“本種ト *H. purpurea* トハ果シテ別種ニ屬スルカ否カノ疑ナキ能ハズ；*H. purpurea* ハ極メテ變形シ易ク其或形狀ノモノト本種トハ往々ニシテ區別シ難キモノアリ。然レドモ、概シテ、主軸ト枝トノ直徑ノ差ハ *H. purpurea* ノ方 *H. australis* ヨリモ遙ニ大ナリ。”氏ハ實ニ此差ニ基ツキテ本種ヲ區別シタルモノニシテ余モ亦之ニ倣ヘリ；然レドモ氏モ果シテ如何ナル點ニ於テ明確ニ區別スベキカヲ詳ニセズト附記シタル如ク兩者ノ區別ハ充分明ナラズトス。或ハ將來此二者ヲ同一種トスルヲ適當ナリトスルノ時アランカ。又小枝ノ細キ形狀ヲ有スルモノ(第CLVI圖版ノ下部ノモノ)ハ專ラ寒流ノ末流帶ニ在ル爲メ萎縮シタルモノナリト思惟ス。

第CLVI圖版。 *Helminthocladia australis* Harv., ベにもづく、ノ體；下方ニ小枝ノ短クシテ細キ形狀ノモノ、一部ヲ畫ケリ、(自然大)。

第 CLVII 圖版, 7-21 圖. 7: 體ノ縱断面, $\frac{1.3}{1}$.—8: 外層絲ニ一ノ胎原列ヲ有スルモノ; 外層絲ノ下部ヨリ側面ニ根様絲ノ出ルヲ示ス, $\frac{2.20}{1}$.—9: 幼部ノ外層絲ニ無色ノ毛, h , ナ有スルモノ, $\frac{3.20}{1}$.—10: 精子器, $\frac{2.20}{1}$.—11-15: 胎原列ノ種々ノ形狀; 3-5 個細胞ヨリ成ルヲ示ス; $\frac{3.30}{1}$.—16: 受胎シタル胎原列, $a-d$ ヨリ ef ト gh トノ二條ノ胞子絲ヲ出セルモノ, $\frac{3.30}{1}$.—17-19: 囊果形成ノ初期; 19 ハ其稍進ミタルモノ, $\frac{3.30}{1}$.—20: 幼キ胞子絲ノ一部, $\frac{5.01}{1}$.—21: 幼キ胞子, $\frac{5.01}{1}$.

Odonthalia semicostata (Mert.) J. Ag.

PL. CLVII, Fig. 1-6.

Od. semicostata (Mert.) J. Ag. Sp. Alg. II, p. 898; De Toni Syll. Alg. IV, p. 1141.

Fronde flat rising from scutate disc, broadly linear, 10-15 cm high, 3-5 mm broad in branches, much broader in the main portion, often attaining 5-8 mm or more, decompound pinnate, alternately dentate along both margins, traversed by more or less flexuose faint midrib which evanescently disappears upward (in Fig. 1, the midrib is represented too distinctly) and thickens below for a short distance like stem. *Lacineae* are dentate or deltoideo subulate, erect or parted in lower part, but subfalcate near apices of branches. Veins running from the midrib to marginal *lacineae* alternate faintly, but stand opposite here and there where branches and *lacineae* oppose to each other. *Ramuli* arise in the axils of *lacineae*, three or more in one row above an axil, often densely aggregated, and some of them grow up into branches. *Fruits* unknown. *Color* brick-red with purplish tint in dried state and somewhat dusky. *Substance* membranaceous and the plant rather closely adheres to paper in drying.

Hab.: floating 10 miles off the mouth of the *Riv.* Osernaya

in the western coast of Kamchatka, some 35 miles north of C. Lopatka.

The present plant has a strong resemblance with *Odonthalia semicostata* illustrated in Setchell and Gardner's *Algae of North-western America* p. 336, pl. 26,27, in having closely arranged alternate dentiform to subulate lacineae along margins of branches; but the mode of ramification and presence of axillary branches differ from it. The authors illustrate regularly alternate branches which have no pinnule standing in axils and the substance is said as thick. J. Agardh (*l.c.*) describes *Oa. semicostata* Mert. from Kamchatka as having thin membranaceous frond bearing minute pinnulae in axils. Collins (*The Mar. Alg. of Vancouver Island*, 1913, p. 122) considers Setch. and Gardn.'s plant as a species different from that of J. Agardh, probably on account of thicker substance, alternate ramification and absence of axillary pinnulae. Taking into consideration the locality of Mertens' plant is same as that of ours which has much resemblance with J. Agardh's descriptions, I refer our plant to the present species, though I have not seen any reliable specimen or illustration of the species.

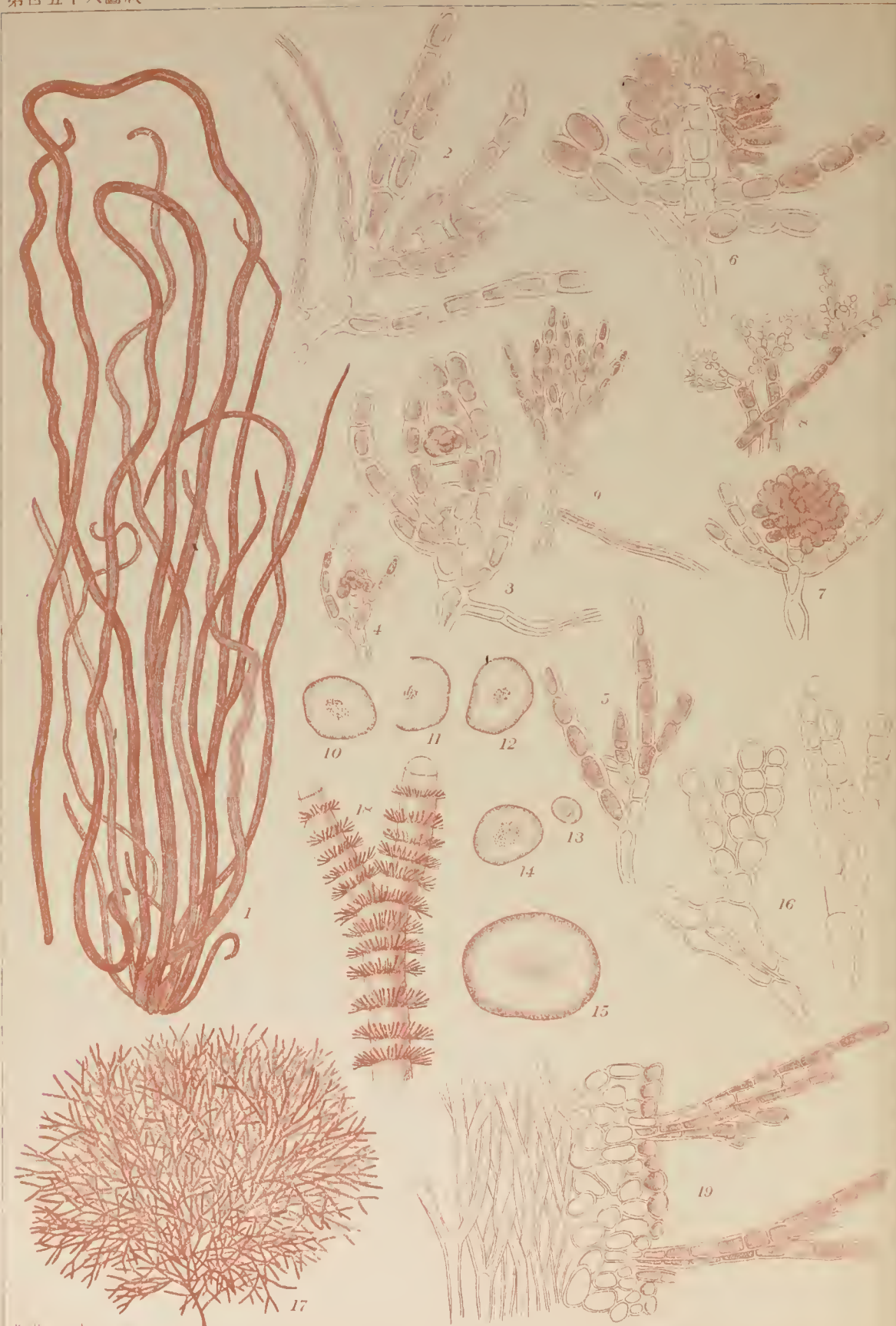
PL. CLVII, fig. 1-6. Fig. 1: sterile frond of *Odonthalia semicostata* (Mert.) J. Ag. on the frond of *Ptilota asplenoides*, $\frac{1}{1}$.—Fig. 2: holdfast embracing the frond of *Pt. asplenoides*, a ; $\frac{12}{1}$.—Fig. 3: growing apex of frond; a , apical cell; b, b' , lacineae; $\frac{353}{1}$.—Fig. 4: cross-section of frond; c , central axis; c' , vein; $\frac{48}{1}$.—Fig. 5: costal portion of fig. 4. magd.; c , central axis; $\frac{220}{1}$.—Fig. 6: longitudinal section of frond, $\frac{48}{1}$.

*Odonthalia** *semicostata* (Mert.) J. Ag.

第CLVII圖版, 1-6圖.

體ハ扁平ニシテ, 盤狀根ヨリ立チ, 線狀ニシテ幅廣ク, 10-15

* *Odonthalia* Lyngb., のこぎりひば屬, ノ性質ハ第二卷144頁ニ在リ



K. Okamoto

Nemalion vermiculare Suring うみぞうめん Fig. 1-16
Actinotruchia rigida (Lamour) Decne そでがらみ Fig. 17-19

cm 高く、枝ノ幅 3-5 mm. ナレドモ、主軸ハ遙ニ廣ク、往々 5-8 mm. 若クハ夫以上ニ達シ、複羽狀ニ分岐シ、兩縁ニ沿フテ鋸齒ヲ互生シ、多少雁木狀ニ屈曲セル中肋ヲ存ス；中肋ハ不鮮明ニシテ上方ニ消滅ス（I 圖ニハ中肋ハ稍鮮明ニ過ギタリ）、而シテ體ノ下部ニテハ少距離ノ間増厚シテ莖狀ヲナス。齒片ハ鋸齒狀又ハ稍三角狀ニシテ尖銳、枝ノ下部ニテハ直立シ又ハ開ケドモ頂端附近ニテハ稍内方ニ屈曲ス。側脈ハ中肋ヨリ縁邊ノ齒片ニ向テ走り、互生スレドモ鮮明ナラズ、又處々枝ト齒片ト對生スル處ニハ脈モ亦對生ス。小枝ハ齒片ノ腋ヨリ出デ、三個若クハ夫以上一列ニ列シ、又往々密ニ集リテ出デ、其中或モノハ枝ト成ル。果實ハ詳ナラズ。色ハ乾燥品ニテ煉瓦色ニ紫紅色ヲ帶ビタルモノ、如クシテ幾分淡黒シ。質ハ膜質ニシテ稍密ニ紙ニ附着ス。

產地：勘察加西岸オゼルナヤ河口ヨリ十湮沖ニ漂流（川上宗治氏採）。今邦内ノ産ヲ知ラズト雖モ多分之アルベシ。

分布：勘察加。

本植物ハ枝ノ兩縁ニ密ニ互生スル齒狀片ヲ存スル點ニ於テ Setchell and Gardner 氏ノ *Algae of Northwestern America* p. 336, pl. 26, 27 ニ圖示シタル *Od. semicostata* ト酷似ス；然レドモ枝ノ配置ト腋出ノ枝ナキトハ之ト異ナリトス。兩著者ハ腋ヨリ出ル小枝ナクシテ正ク互生スル枝ヲ有スルモノヲ圖シ、質ハ厚シト記セリ。又 J. Agardh 氏ハ「カムサツカ」ヨリ得タル *Od. semicostata* Mert. ヲ記載シテ薄キ膜質ニシテ腋ヨリ小羽枝ヲ出スト記セリ。而シテ Collins 氏ハ *The mar. Alg. of Vancouver Island*, 1913, p. 122 ニ Setch. and Gardn. 氏ノ前記ノ種ヲ J. Agardh 氏ノ種トハ別ナリトセリ；其理由ハ多分、薄膜質ナルコトト、枝ノ互生スルコト及腋出ノ小羽枝ナキコトナルベシ。今 Mertens 氏ノ植物ノ產地ハ余ノ今得タル品ト同產地ナルコトヲ考ヘ其鋸齒ノ容

子ノ Setch. and Gardn. 氏ノ圖ニ酷似シテ然モ J. Agardh ノ記載ト一致スルヲ以テ余ハ之ヲ本種ナリト認ム、但シ標品及圖ヲ參考スル能ハザリキ。

第 CLVII 圖版, 1-6 圖. 1: *Odonthalia semicostata* (Mert.) J. Ag. ノ實ナキ體, $\frac{1}{1}$ —2: 根ハ *Ptilota asplenioides* ノ枝 (a) ナ抱擁シタリ; $\frac{1.2}{1}$ —3: 成長點, a; b, b', 齒片, $\frac{2.2.3}{1}$ —4: 體ノ横断面; c, 中軸; c', 側脈, $\frac{2.2}{1}$ —5: 4 圖ノ中軸部; c, 同上; $\frac{2.2.0}{1}$ —6: 縦断面, $\frac{4.2}{1}$.

Nemalion vermiculare Sur.

Nom. Jap.: *Umi-zomen*.

PL. CLVIII, Fig. 1-16.

Nemalion vermiculare Sur. Illustr. Alg. du Japon I, p. 91, tab. XXXIV; Hariot Alg. de Yokoska, p. 218, n. 24; De Toni Syll. Alg. IV, p. 78; Id. Phyc. Jap. Nov. p. 19.

*Fronde*s simple or sparingly branched or splitted, vermicular, very soft and slippery, 10-20 cm. long, 1.5-2 mm. thick, deep vinoso-red fading to yellowish in age. Central strand mostly slender and as thick as $\frac{1}{2}$ — $\frac{1}{3}$ of the length of peripheral filaments whose upper articulations are less moniliform and a little elongated or almost cylindrical. Dioecious. *Substance* gelatinoso-cartilaginous and the plant closely adheres to paper in drying.

Hab.: On rocks between tide marks near high tide; Pacific coast from Kyushyu to Prov. Mutsu; Otaru, Teshiwo; between Prov. Idzumo and Prov. Yechigo; Sado Isl. Sekito (Chosen). Fruits: early summer.

In external appearance the plant is difficult to distinguish from *N. lubricum*, but as Suringar stated, the thickness of central strand of the former is much more slender than that of the latter; moreover the upper articulations of peripheral filaments are less moniliform

and much elongated than those of *N. lubricum*. After the establisher's opinion I put the plant under the present species. However, I can not help to doubt whether the plant should not be a local form of *N. lubricum*.

PL. CLVIII, fig. 1-16. Fig. 1: fronds of *Nemalion vermiculare* Sur., $\frac{1}{1}$.—Fig. 2-4: different stages of carpogonium after fertilization; 2, 3: $\frac{567}{1}$; 4: $\frac{353}{1}$; in fig. 4 antheridia are seen.—Fig. 5: early stage of procarp and peripheral filaments, $\frac{353}{1}$.—Fig. 6: optic section showing spore filaments arising from carpogonium, $\frac{567}{1}$.—Fig. 7: full-grown cystocarp, $\frac{353}{1}$.—Fig. 8: antheridia, $\frac{353}{1}$.—Fig. 9: peripheral filaments, $\frac{220}{1}$.—Fig. 10-12: cross-sections of fronds (10, 11: from alcohol material; 12: from dried one); $\frac{10}{1}$.—Fig. 13: another cross-section having rather thick central strand (alcohol material), $\frac{10}{1}$.—Fig. 14: the same as fig. 13, $\frac{22}{1}$.—Fig. 15: cross-section of herbarium specimen of *N. lubricum* from Adriatic Sea, $\frac{22}{1}$.—Fig. 16: two pieces of peripheral filaments of the same specimen as fig. 15, $\frac{353}{1}$.

*Nemalion*¹⁾ *vermiculare* Sur.

うみぞうめん

第CLVIII圖版, 1-16圖.

體ハ單條, 僅ニ分歧シ或ハ裂ケ, 蠕蟲狀ニシテ甚シク柔軟, 粘滑, 10-20 cm. 高ク, 1.5-2 mm 太ク, 濃キ紫紅色ニシテ老成スルトキハ稍黃色トナル. 髓絲層ハ概ネ細ク其直徑外層絲ノ長サノ $\frac{1}{2}$ 乃至 $\frac{1}{3}$ 程ニシテ, 外層絲ノ上部ノ關節ハ輕ク念珠狀ニ連ナリ, 幾分長味ニシテ或ハ略ボ圓柱狀ナリ. 雌雄同株. 質ハ粘滑ナル軟骨質ニシテ乾燥スルトキハ密ニ紙ニ附着ス.

產地: 潮線間ノ岩石ニ生ジ, 高潮線附近ニ多シ. 九州四國, 阿波鳴門; 大阪(Sur.); 鳥羽; 三河篠島(名倉氏); 横須賀(Savat.) 小

1) *Nemalion*, うみぞうめん屬, ノ性質ハ第一卷40頁ニ在リ.



名濱, 陸前渡波, 小友; 陸奥下風呂, 鮫, 蛇浦(東氏); 出雲越後間; 佐渡(村上正雄), 小樽, 天鹽. 朝鮮赤島(松野氏). 果實: 初夏.

本植物ハ外形ノミニテハ *N. lubricum* ト區別スルコト容易ナラズ; 然レドモ Suringar 氏ノ既ニ論ジタル如ク, 髓絲層ノ太サハ *N. lubricum* ノモノヨリモ遙ニ細キノミナラズ, 外層絲ノ上部ノ關節ハ該種ノモノヨリモ念珠狀ヲ呈スルコト少ナク且長シトス. 予ハ今此說ニ基ヅキ氏ノ所見ニ隨テ *N. lubricum* ト分ツト雖モ, 本種ハ該種ノ地方的變形ニハアラズヤト疑ハザルヲ得ザルモノナリ.

第 CLVIII 圖版, 1-16 圖. 1: *Nemalion vermiculare* Sur., うみぞうめんノ體, $\frac{1}{1}$ —2-4: 胎心ノ受胎シタル後二個ヨリ數個ニ分裂シ, 成胞絲ヲ出ス狀; 2ト3トノ細キ絲ハ根樣絲ナリ; 4ニハ精子器アリ; 2, 3: $\frac{5.07}{1}$, 4: $\frac{3.53}{1}$.—5: 幼キ胎原列ト外層絲 $\frac{3.53}{1}$.—6: 透視縱斷面ニシテ胎心細胞, $\frac{5.07}{1}$ ヨリ成胞絲ノ出ル狀, $\frac{5.07}{1}$.—7: 成熟セル囊果, $\frac{3.53}{1}$.—8: 精子器, $\frac{3.53}{1}$.—9: 外層絲ト根樣絲, $\frac{2.20}{1}$.—10-12: 體ノ橫斷面; 10, 11: アルコホール材料; 12: 乾燥品; $\frac{1.0}{1}$.—13: 稍太キ髓絲層ヲ有スル部分ノ橫斷面(アルコホール材料), $\frac{1.0}{1}$.—14: 13圖ニ同シ, $\frac{2.2}{1}$.—15: アドリアチツク海ノ *N. lubricum* ノ乾燥品ノ橫斷面, $\frac{2.2}{1}$.—16: 同上ノ外層絲ノ二片, $\frac{3.53}{1}$.

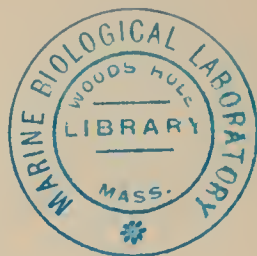
Actinotrichia rigida (Lamour.) Decne.

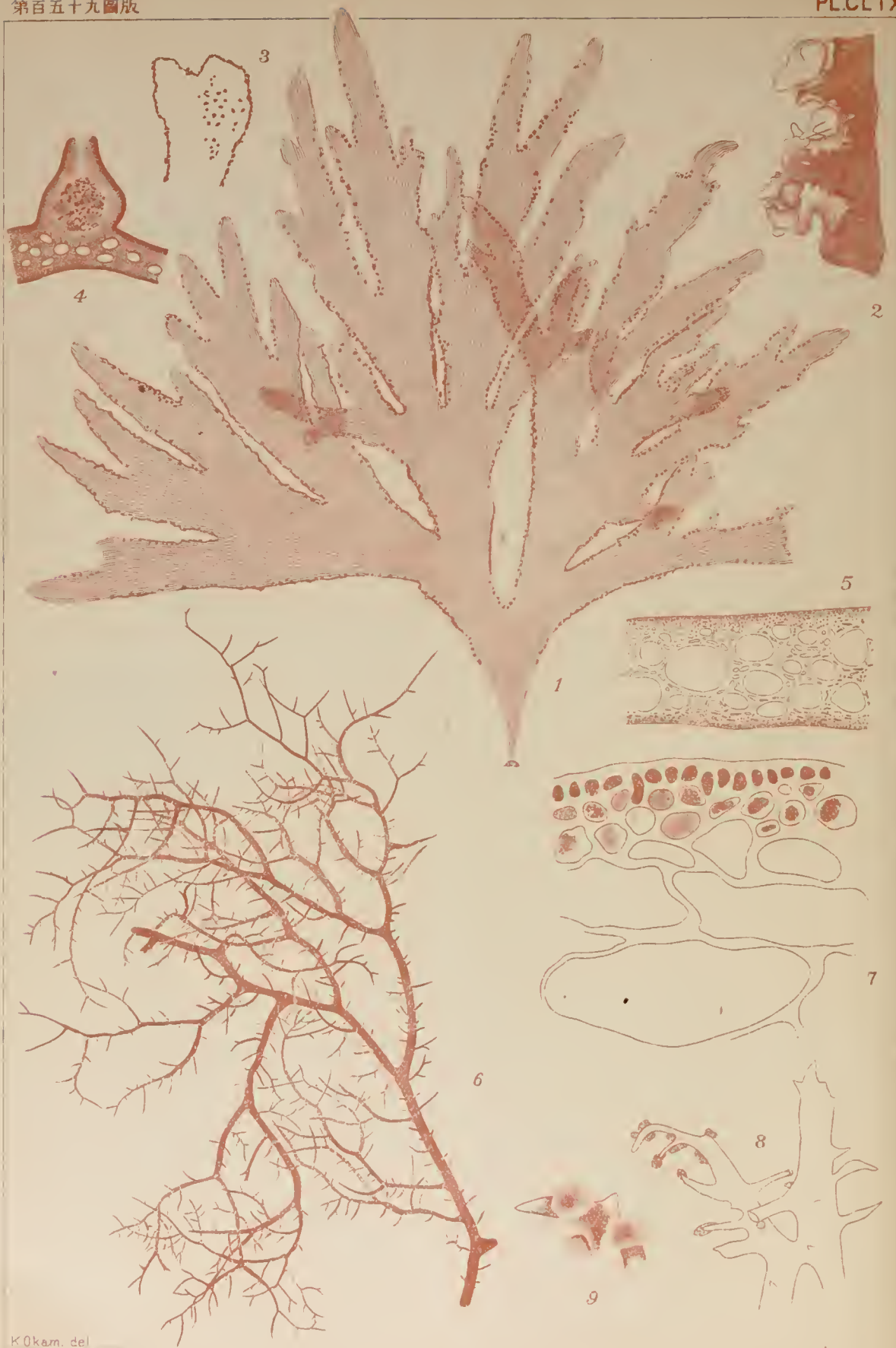
Nom. Jap.: *Sodé-garami*.

PL. CLVIII, Fig. 17-19.

Actinotrichia rigida (Lamour.) Decne. in Ann. Sc. Nat. XVIII, p. 118 Kütz. Sp. Alg. p. 531; De Toni Syll. Alg. IV, p. 117.—*Galaxaura rigida* Lamour. Hist. Polyp. flex. p. 265, t. 8, f. 4; Asken. Alg. Exped. Gazelle p. 32, t. 7, f. 1-7.—*Galaxaura indurata* Kütz. Tav. Phyc. VIII, t. 31.

Fronde forming almost ball-like mass, 5-8 cm. high, cylindrical, 0.8-1 mm. thick, many times densely and regularly dichotomous, with patent or acute axils, calcified, ending in blunt apices, with





Callophyllis crispata Okam. ひろはのとさかもどき Fig. 1-5.
Hypnea cervicornis JAg. かづのいばら Fig. 6-9.



Hyndea cervicornata J. Ag. かつのいばら Fig 1-5.
Chondrus elatus Holm ことぢつのまた Fig1-14

2

1 4 3

6 5 8 10

12 7 14 9 13 11

dense whirls of short, simple or branched, colored hairs, closely arising in short distances in almost horizontal direction. Hairs consist of single row of short cylindrical cells ending in equally thick, blunt apices. The whirls of hairs drop off in the lower portion of older branches leaving annular marks behind. *Fruits* unknown. *Color* purplish-red, fading to yellowish or pale greenish. *Substance* rigid and the plant does not adhere to paper in drying.

Hab.: Ryukyu, Prov. Hyuga, Nagasaki, Prov. Sagami, Prov. Boshyu.

PL. CLVIII, fig. 17-19 Fig. 17: frond of *Actinotrichia rigida* (Lam.) Decne., 1.—Fig. 18: portion of branch, a little magd.—Fig. 19: portion of longitudinal section of frond, $\frac{220}{1}$.

Actinotrichia Decaisne.

そでがらみ属

CHAETANGIACEAE キータンギア科.

属ノ性質ハ種ニ同シ.

下記ノ唯一種ノミニシテ毛ノ正シク輪生スルヨリ Decaisne 氏ガ *Galaxaura* 属ヨリ別チタルナリ.—属ノ名ハ *actis* (射出) ト *thrix* (毛) トヨリ成ル.

Actinotrichia rigida (Lamour.) Decne.

そでがらみ 岡村稱

第CLVIII圖版, 17-19圖.

體ハ殆ド球狀ノ團塊ヲナシ, 5-8 cm. 高ク, 圓柱狀, 0.8-1 mm. 太ク, 數回密ニ正シク叉狀ニ分岐シ, 腋ハ廣開シ又ハ狹ク, 枝端鈍圓ニシテ, 短キ單條又ハ分岐セル毛ヲ輪生シ, 毛輪ハ近ク相

接シテ殆ド水平ニ出ヅ。毛ハ密ニ生ジテ紅色、短キ圓柱狀細胞ノ一列ヨリ成リ、各部トモ同シ太サニシテ末端鈍圓ナリ；而シテ早落性ニシテ、其落ルトキハ環紋ヲ殘ス。髓層ハ密ニ縱走セル絲ニシテ多數ノ同様ナル根様絲ヲ伴ナフ。皮層絲ハ内皮部ニ於テ多數ノ根様絲ヲ存シ、外方ニハ數回叉狀ニ分歧シ、短キ細胞ノ關節シタル絲ヨリ成リ、互ニ相密接シテ可ナリ薄キ皮層ヲ作り、細胞組織ノ如シ；又外皮ノ表層ハ小サキ細胞ヨリ成ル；外皮層ノ寒天質ハ石灰質ヲ含ミ若クハ充分ニ石灰化ス。——四分胞子、精子器及囊果ハ從來不明ナリ。色ハ紫紅色ニシテ黃色又ハ淡綠色トナル。質ハ固ク乾燥スルトキハ紙ニ附着セズ。

產地：琉球、日向、長崎、相模、房洲。

分布：紅海、印度洋及太平洋。

第 CLVIII 圖版、17-19 圖。 17: *Actinotrichia rigida* (Lam.) Decne. ノ體、 $\frac{1}{2}$ —18: 枝ノ一部、(少シク郭大) —19: 體ノ縱斷面ノ一部、 $\frac{220}{1}$ 。

Callophyllis crispata Okam.

Nom. Jap.: *Hiroha-no-tosakamodoki*.

PL. CLIX, Fig. 1-5.

Callophyllis crispata Okam. Contr. Knowl. Mar. Alg. Jap. II. (Bot. Mag. Tokyo, Vol X, 1896), p. 21, pl. III, 1, 2.

“Plants rising from a callous disc, solitary or few tufted shortly stipitate, 10-20 cm high or more. Stipe compressed or almost cylindrical, afterward either simple or divided, giving rise to many main divisions and soon expading into narrower or broader cuneate base of frond. Frond divided in di-polychotomous often palmato-flabellate manner, and again decompounded in a

similar way; so that the outline of frond, when placed in expansion, forms a large segment of a circle. Segments broadly linear cuneate, more or less expanding beneath forks, 2–3 cm broad in broader, 0.5–10 mm in narrower portions; they are erect or more patent with narrower or wider, more or less rounded axils respectively; toward apices they remain either simple and ligulate, or divided into lacinae, all ending in a rounded apex, being narrower than the lower portion. Margins are entire and perfectly naked in younger and sterile forms, minutely curled or crenulated in fructified frond, appearing as if fimbriated with very minute processes, or again, in very rare cases, furnished with a few proliferous lacinae.—*Cystocarps* are hemispherical tubercles, prominent on one surface, being situated on both surfaces of frond, crowned with mostly two short bluntish prominences. They are formed in some forms, exclusively in intramarginal portions, some being situated in marginal processes, in others on the surface of frond at the same time. *Tetraspores* densely scattered all over the frond which is either entire or curled at margin. *Color* blood-red or rosy, fading to greenish. *Substance* membranous, or thin and soft leathery, becoming thickish in older specimens.”

Hab.: On rocks in sublitoral region. Prov. Shima, Sagami, Bōshyu, Kadzusa, Hitachi and Iwaki.

PL. CLIX, fig. 1–5. Fig. 1: cystocarpic frond of *Callophyllis crispata* Okam., $\frac{1}{1}$.—Fig. 2: portion of margin bearing cystocarps, $\frac{19}{1}$.—Fig. 3: portion of frond bearing cystocarps on surface, $\frac{1}{1}$.—Fig. 4: vertical section of cystocarp, $\frac{22}{1}$.—Fig. 5: cross-section of frond, $\frac{48}{1}$.

*Callophyllis*¹⁾ *crispata* Okam.

ひろはのとさかもどき 岡村稱。

第CLIX圖版. 1-5圖.

體ハ小吸盤狀根ヲ以テ立チ、單獨又ハ數個叢生シ、短莖ヲ有シ、高サ10-20 cm. 若クハ尙餘アリ。莖ハ扁壓又ハ略圓柱狀ニシテ後其マ、分レザルカ又ハ分岐シテ直ニ楔形ニ擴ガリ以テ數多ノ主部トナル。體ハ又狀一多又狀ニ分レ往々掌狀様一扇狀ニ擴ガリ其各部復同様ニ分岐ス；故ニ體ノ輪廓ハ之ヲ展グル時ハ圓ノ一部ヲナス。各部ハ幅廣キ線狀又ハ線狀一楔形ニシテ又枝ノ下ノ所ニ多少開張シ、幅廣キモノニテハ2-3 cm 狭キモノニテハ0.5-10 mm アリ、而シテ直立シ又ハ廣開シ、多少圓キ廣キ又ハ狹キ腋ヲ以テ分レ、頂端ノ方ニハ單條ニシテ舌狀ヲナスカ又ハ數個ノ小裂片ニ分レ、其各皆圓頭ヲ以テ終リ下部ヨリモ幾分狹シ。緣邊ハ全緣ニシテ幼者及實ナキ體ニテハ平坦ナレドモ實アルモノニテハ細カク縮ミ又ハ小缺刻ノ如ク極メテ小ナル突起ヲ以テ恰モ緣邊ニ總ヲシタル如ク又稀ニハ僅少ノ裂片ヲ副出スルコトアリ。——囊果ハ半球狀ニシテ體ノ一方ノ面ニ隆起シ、兩面ニ存シ、概ネ二個ノ短キ鈍頭ナル突起ヲ戴ク；而シテ或ハ專ラ緣邊ニ接近シタル部分ニ生ジ或ハ緣邊ノ小突起ニ存シ、又同時ニ體ノ表面ニモ存ス。四分胞子ハ體ノ全面ニ散在ス、而シテ其緣邊ハ全緣又ハ皺ミタリ。色ハ血紅色或ハ紫紅色ニシテ綠色トナル。質ハ膜質又ハ薄ク軟カキ革質ニシテ老成スルトキハ稍厚ク成ル。”

產地：低潮線下ノ深處ノ岩石上ニ在リ。志摩、相模、安房、上總、常陸、磐城。

1) *Callophyllis* Kütz., とさかもどき屬ノ性質ハ日本海藻圖說第一卷八五頁ニアリ。

第 CLIX 圖版, 1-5 圖. 1: *Callophyllis crispata* Okam. ノ實アル體, $\frac{1}{2}$ —2: 縁邊ニ囊果アルモノ, $\frac{10}{1}$ —3: 體ノ表面ニ囊果ヲ有スルモノ、一部, $\frac{1}{2}$ —4: 囊果ノ縦断面, $\frac{23}{1}$ —5: 體ノ横断面, $\frac{48}{1}$.

Hypnea cervicornis J. Ag.

Nom. Jap.: *Kadzuno-ibara*.

PL. CLIX, Fig.6-9 ; PL. CLX, Fig. 1-5.

Hypnea cervicornis J. Ag. Sp. Alg. II, p. 451; Id. Epicr. p. 564; De Toni Syll. Alg. IV, p. 480.—*H. spinella* Kg. Tab. Phyc. XVIII, t. 26.

Fronds forming large, loosely intricate, globular or slightly depressed mass, attaching at basal branches to gravels, stones, shells etc. by disc like attachments, irregularly branched in divaricato-dichotomous manner. Branches protruding from general mass branched in similar manner, here and there with pinnate segments and densely loaded on all sides with minute or elongated, simple or branched spinose ramelli, 3-5 or 10 mm long, which taper to sharpish points from broader bases. Thicker branches measure 1.5-2.5 mm in thickness, while slender ones are very fine. Ramelli grow up into ramuli which gradually develop into branches and there is no regularity. Branches are very patent with rounded axis, often almost horizontal, making in upper portion the ramification like cervus-horns and gradually taper to a fine point. They unite to each other by disc-like attachments forming an inextricable mass, so that it is unable to disentangle branches without breaking. Frond internally consists of large, almost empty, thin-walled cells and as consequence branches become very much wrinkled when dried. Ramelli or ramuli bearing *tetraspores* swell into fusiform or ovate segments a little above the base.

Cystocarps solitary or mostly 3-5 aggregated, ovate or globular, sessile, borne on ramelli or ramuli. *Color* reddish purple, fading to yellowish or brick red. *Substance* membranaceous and soft cartilaginous, very brittle when recent; plant imperfectly adheres to paper in drying.

Hab.: growing over rocks, stones, gravels or corallines below low tide. Common along the Pacific coast from Ryukyu to Prov. Boshyu. Kuyonpo (Chosen).

On referring the present plant to this species, I was not able to see any reliable specimens but an illustration given in Kuetz. *l. c.* and references cited above.

PL. CLIX, fig. 6-9. Fig. 6: portion of sterile branch protruded from entangled mass of *Hypnea cervicornis* J. Ag., $\frac{1}{1}$.—Fig. 7: portion of cross-section of frond, $\frac{220}{1}$.—Fig. 8: disc-like attachments at basal intricated portion of frond, $\frac{7}{1}$.—Fig. 9: discs enlarged $\frac{22}{1}$.

PL. CLX, fig. 1-5. Fig. 1: tetrasporic ramuli, $\frac{10}{1}$.—Fig. 2: tetrasporic sori magd., $\frac{22}{1}$.—Fig. 3: cystocarpic branch, $\frac{10}{1}$.—Fig. 4-5: cystocarps, $\frac{48}{1}$.

*Hypnea*¹⁾ *cervicornis* J. Ag.

かづのいばら 岡村 稱

第CLIX 圖版, Fig. 6-9; 第CLX 圖版, Fig. 1-5.

體ハ緩ク錯綜セル圓キ又ハ稍扁キ大ナル團塊ヲナシ, 下部ノ枝ニ盤狀附着器ヲ作リテ小石, 貝殼等ニ附着シ, 不規則ニ叉狀ニ分岐ス. 枝ハ塊ヨリ挺出シ, 同シク不規則ニ分岐シ, 其處此處ニ羽狀ノ枝ヲ有シ, 各方面ニ短小ナル又ハ長キ刺狀小枝ヲ存ス, 小枝ハ單條又ハ分岐シ, 3-5乃至10mm長ク, 基部太クシテ頂端尖銳ナリ. 太キ枝ハ太サ1.5-2.5mm, 細キモノハ極メ

1) *Hypnea* Lam., いばらのり屬, ノ性質ハ第一卷47頁ニアリ

テ細シ。最末枝ハ稍大ナル小枝ニ伸長シ、小枝ハ漸次伸ビテ枝トナリ、別段一定ノ規則ナシ。枝ハ甚シク廣開シテ腋圓ク、往々略水平ニ出デ、枝ノ上部ハ宛モ鹿角ノ如ク分岐シ枝端細シ。枝ハ盤狀附着器ヲ以テ互ニ癒着シ錯綜ス、故ヲ以テ枝ヲ解カントスレバ勢ヒ破ラザル能ハズ。體ハ内部大ナル細胞ヨリ成リテ、細胞ハ略空虚ノ如ク、膜薄シ；故ニ乾燥スルトキハ枝ハ甚シク皺ヲ生ズ。——四分胞子ヲ有スル小枝又ハ最末小枝ハ基部ノ少シク上ノ方ニ紡錘狀又ハ卵形ニ膨大ス。囊果ハ單獨又ハ概ネ 3-5 個集合シ、卵形又ハ球狀、無柄ニシテ小枝又ハ最末小枝上ニ存ス。色ハ紅紫色ニシテ稍黃色又ハ煉瓦色トナル。質ハ膜質ニシテ軟カキ軟骨質ヲナシ、生鮮ノ時ハ極メテ脆ク、乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：低潮線下ノ岩石、又ハ珊瑚藻類ノ上ニ擴ガル。琉球ヨリ相房邊ニ至ル間ノ太平洋沿岸ニ普シ。朝鮮九龍浦（松野氏）。

分布：太西洋熱帶部、(ブラジル、西印度及メキシコ)；印度洋（モーリシアス島）。

本種ニ此植物ヲ當ツルニ就テハ別ニ信據スベキ標品ヲ見ル能ハズ唯參考書ノ記載ト Kuetzing ノ圖トノミニテ查定シタリ。

第 CLIX 圖版, 6-9 圖. 6: *Hypnea cervicornis* J. Ag., かづのいばらノ錯綜セル塊狀部ヨリ挺出セル枝ノ一部(實ナキモノ), $\frac{1}{1}$.—7: 體ノ橫斷面ノ一部, $\frac{220}{1}$.—8: 體ノ下部錯綜セル部分ノ附着器, $\frac{1}{1}$.—9: 附着器, $\frac{22}{1}$.

第 CLX 圖版, 1-5 圖. 1: 四分胞子ヲ有スル小枝, $\frac{10}{1}$.—2: 四分胞子群, $\frac{22}{1}$.—3: 囊果ヲ着ケタル枝, $\frac{10}{1}$.—4-5: 囊果, $\frac{45}{1}$.

Chondrus elatus Holmes.

Nom. Jap.: *Kotodzi-tsunomata* or *Naga-tsunomata*.

PL. CLX, Fig. 6-14.

Chondrus elatus Holms On Mar. Alg. fr. Japan, 1895, p. 252, t. IX, 1; De Toni Syll. Alg. IV, p. 182.—*Chondrus platynus* β *elongatus* Martens Preus. Exped., Tange, p. 118?

Fronde caespitose rising from callous disc, tereti-compressed, rather linear, 3-4 mm thick, ca. 15-25 cm high, many times (5-6 times) distantly dichotomous above the halfway of the whole length, with widely parted and roundish axils. Branches obtuse or bifid at apex, equally broad or slightly narrow at base, with or without short, simple or mostly once forked ramuli which arise from both margins in almost horizontal direction, sometimes solitary, sometimes seriated in some number. Segments bearing fruits become sometimes slightly torulose, but mostly remain entire.—*Cystocarps* usually formed in upper branches, slightly prominent on both surfaces, large, elliptical and ocellate. *Tetrasporic sori* forming small oval specks densely scattered over the terminal branches, immersed beneath cortex. *Color* dark purplish red with brownish tinge. *Substance* cartilaginous and the plant becomes rigid in drying.

Hab.: On rocks between tide marks. Pacific coast from Prov. Totomi to Prov. Rikuchyu.

Martens describes in his *l. c.* *Chondrus platynus* β *elongatus* get at Yokohama with the diagnosis: "fronde basi tereti, dichotoma, angusta, elongata." This I think most probably to be same as the present plant, though I do not see any specimen of it.

PL. CLX, fig. 6-14. Fig. 6: sterile frond of *Chondrus elatus* Holm., $\frac{1}{2}$.—Fig. 7: tetrasporic fronds, $\frac{1}{2}$.—Fig. 8: cystocarpic branch, $\frac{1}{2}$.—Fig. 9:

cross-section of frond bearing cystocarps, $\frac{18}{1}$.—Fig. 10: nucleoli, $\frac{220}{1}$.—Fig. 11: portion of cross-section of frond, $\frac{220}{1}$.—Fig. 12: portion of longitudinal section of frond, $\frac{220}{1}$.—Fig. 13: cross-section of frond bearing tetrasporic sori, $\frac{13}{1}$.—Fig. 14: tetraspores $\frac{220}{1}$.

Chondrus Stackh. 1797.

つのまた属.

GIGARTINACEAE すぎのり科.

體ハ扁圓, 扁壓又ハ扁平, 概ネ數回叉狀ニ分岐シ, 稀ニ縁邊ヨリ副出シ, 絲組織ヨリ成ル: 髓層ハ細キ縦走セル絲ニシテ其處此處ニ分叉シ, 外方ニ多數ノ屢叉狀ニ分レタル皮層絲ヲ出ス; 皮層絲ノ内部ハ幾分緩ケレドモ可ナリ密ニ集リ, 外方ニハ小細胞ノ念珠狀ニ連ナレルモノ互ニ密接シテ外皮層ヲナス; 髓及内皮部ノ絲狀細胞ハ略ボ同様ニシテ多數ノ連絡點ヲ存ス; 寒天質ハ多ク, 容易ニ粘化ス. 成長點ハ扇狀ニ射出セル絲組織ヨリ成ル.——四分胞子囊ハ十字樣ニ分裂シ多數ノ不規則ナル群ヲナシテ集リ, 内皮部ニ埋入ス, 然レドモ時ニハ多少髓層ノ方ニ近ク存ス. 胎原列ハ外皮層ノ基部ニ近ク多數ニ生ジ, 3個細胞ヨリ成リ, 概ネ鈎狀ニ屈曲シ, 一條ノ皮層關節絲ノ特ニ著シク増大シタル細胞ニ附着シ, 此細胞助細胞トナル. 熟シタル助細胞ハ體ノ内部ノ方ニ成胞絲ヲ出ス; 即チ助細胞ヨリ盛ニ各方面ニ枝ヲ出シ, 此枝又分岐シテ中性組織ノ細胞ト連絡點ヲ作リテ(或ハ癒合シテ)連絡ス, 而シテ此枝ノ出ル部分ハ體ノ内部ノ特ニ少シク組織ノ弛緩シタル所ニシテ新ニ形成セラレタル根樣絲ノ爲メニ多少密ニ錯綜セル組織ノ中ニ於テス; 成胞絲ノ末梢ヲ形成スル數多ノ關節ハ胞子ト成ル. 仁ハ幾分萎縮シタル如キ絲ヨリ成レル不規則ナル網ノ如キ組織ニシテ其網目ヲ填充スル胞子ノ小團塊ノ集合ヨリ成ル;

而シテ特ニ此仁ヲ包圍スル特別ノ絲組織ナク、體ノ中ニ埋
在ス。囊果ハ體ノ主枝ニ散在シ概ネ僅ニ一方ノ側ニ膨起ス。

主トシテ寒冷ノ海ニ産シ約5種アリ、多クハ非常ニ變形シ
易ク各種ノ區別容易ナラズ。——屬ノ名ハ chondrus (軟骨) ヨリ成ル。

Chondrus elatus Holmes.

ことぢつのまた、ながつのまた

第CLX圖版, 6-14圖。

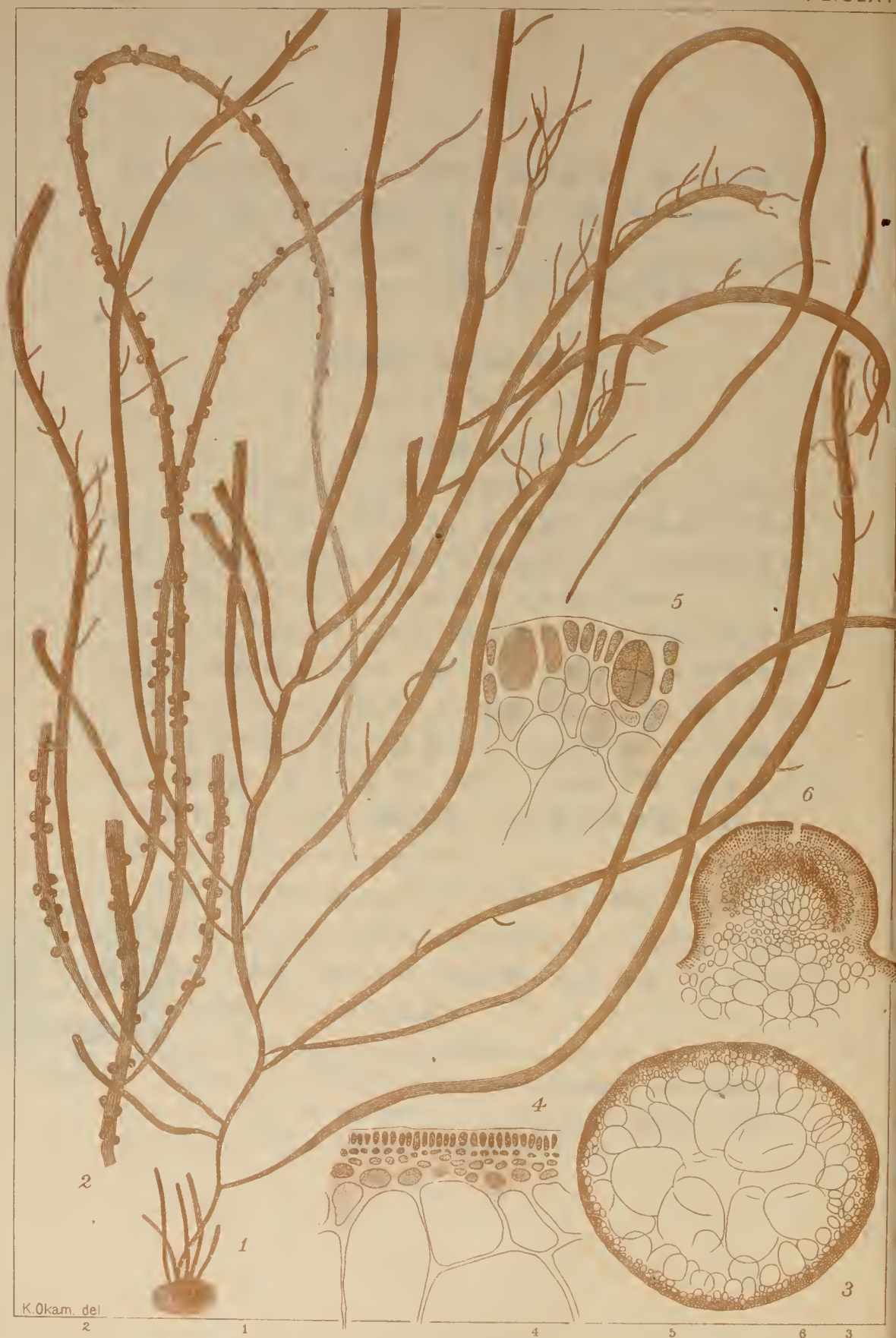
體ハ小吸盤狀根ヨリ叢生シ、扁圓—扁壓、線狀、3-4 mm. 太ク、
約15-25 cm. 高ク、體ノ半分以上ヨリ、數回(5-6回)稍離レテ叉狀
ニ分岐シ、廣開シ、腋圓シ。枝ハ頂端鈍圓又ハ二裂シ、基部少シ
ク狹ク或ハ同ジ太サニシテ兩緣ヨリ小枝ヲ副出スルコトア
リ、小枝ハ短ク、單條又ハ概ネ一回分叉シ殆ド水平ニ出デ、時ニ
單獨時ニ數個相並ビ生ズ。實ヲ有スル部分ハ時ニ稍瘤々ニ
ウネレドモ、多クハ全緣ナリ。——囊果ハ通常上部ノ枝ニ形成
セラレ兩方ノ面ニ少シク隆起シ、大ナル橢圓狀ニシテ眼球ノ
如シ。四分孢子群ハ卵圓形ノ班ヲナシ、頂部ノ枝ニ密ニ散在
シ、皮層下ニ埋ル。色ハ暗紫紅色ニシテ稍褐色ヲ帶ブ。質ハ軟
骨質ニシテ乾燥スルトキハ硬シ。

產地：潮線間ノ岩石上ニ在リ。遠江ヨリ陸中ニ至ル沿岸。

Martens 氏ハ Preus. Exped. n. Ost Asien p. 18ニ Chondrus platynus
β elongatus ヲ横濱ニ得タリト。該植物ハ余其標品ヲ見ズト雖
モ多分本植物ナルベシト思惟ス。

第CLX圖版, 6-14圖, 6: Chondrus elatus Holm., ことぢつのまた, ノ實ナキ體,
7: 四分孢子ヲ有スル體, 8: 囊果アル枝, 9: 囊果アル體ノ横斷面, $\frac{1.5}{1}$.
10: 小仁ノ一部, $\frac{2.0}{1}$. 11: 體ノ横斷面ノ一部, $\frac{2.0}{1}$. 12: 體ノ縱斷面ノ一部, $\frac{2.0}{1}$.
13: 四分孢子群アル體ノ横斷面, $\frac{1.5}{1}$. 14: 四分孢子, $\frac{2.0}{1}$.





Gracilaria Chorda Holm. つるしらも

Gracilaria Chorda Holm.

Nom. Jap.: *Tsuru-shiramo*.

PL. CLXI.

Gracilaria Chorda Holm. On Mar. Alg. fr. Japan 1895, p. 253; La Nuova Notarisia 1897, p. 23; De Toni Syll. Alg. IV, p. 454.

Fronde caespitose rising from a large circular scutate disc, elongated, 60-100 cm. long, cylindrical with more or less traceable main segment, thickened at the middle portion into the thickness of 2-2.5 mm. in diameter, attenuated below into the slender stem and tapering above into filiform apex, furnished on all sides with alternate and similarly shaped branches. Branches elongated often 60 cm. or more long, not densely arising, but scattered and strongly attenuated gradually toward the base and apex; they are mostly simple and naked, sometimes loaded with a few short and slender, filiform branchlets. Frond internally consists of large almost empty thin-walled cells, covered with sharply defined thin layer of cortex which consists of a few layers of thick-walled cells, arranged parallel to the surface. *Cystocarps* sessile, prominent, hemispherical, not crowned with beaks; neucleus simple, not lobed and there is no filament connecting pericarp and placenta. *Tetraspores* scattered among cortical layer. *Colour* deep purplish red. *Substance* soft cartilaginous; the plant becomes much collapsed and imperfectly adheres to paper in drying.

Hab.. On rocks in shallow waters protected from the open sea, one meter below low tide. Prov. Sagami, Prov. Idzu, Prov. Kii. Fruits:—spring.

PL. CLXI. Fig. 1: sterile frond of *Gracilaria Chorda* Holm., $\frac{1}{1}$.—Fig. 2: portion bearing cystocarps, $\frac{1}{1}$.—Fig. 3: cross-section of frond, $\frac{22}{1}$.—Fig. 4: portion of the cross-section of frond magd., $\frac{83}{1}$.—Fig. 5: tetraspores, $\frac{83}{1}$.—Fig. 6: vertical section of a cystocarp, $\frac{22}{1}$.

Gracilaria Chorda Holm.*

つるしらも 遠藤 稱

第 CLXI 圖版

體ハ多數叢生シ一個ノ大ナル圓盤狀根ヨリ立チ、長ク、長サ往々二三尺ニ達シ、圓柱狀ニシテ、主軸多少明ニ、中央部最モ太クシテ直徑 2-2.5 mm. ニ達シ、下部ハ甚シク細ク、上部モ亦絲狀ヲナス。枝ハ主軸ノ各方面ニ互生シ主軸ト同様ノ形態ヲ存シ、長シタテ往々二尺餘ニ達シ、決シテ密ニ出ルコトナク互ニ相離レテ存ス、枝ノ下部ハ漸次細クナリ枝端ノ方ニモ亦細ク、概ネ單條ニシテ分岐スルコトナク、又大抵小枝ヲ存セザレドモ、時ニ之アルコトアリテ僅少ノ短キ絲狀ノ小枝ヲ着ク。體ノ内部ハ殆ド空虚ノ如キ大ナル薄キ膜ノ細胞ヨリ成リ、外部ハ明ニ區別セラルベキ薄キ皮層ヲ以テ蔽ハル、皮層ハ厚膜ヲ有スル數層ノ細胞ヨリ成リ、細胞ハ體ノ表面ト殆ド並行ニ存ス。嚢果ハ半球狀ニ膨大シテ柄ナク、又嘴狀突起ナシ、仁ハ單塊ニシテ分裂スルコトナク、胎座ト果皮トヲ結ベル絲組織ナシ。四分孢子ハ皮層中ニ散在ス。色ハ深紅紫色ナリ。質

* *Gracilaria*, おごのり屬ノ性質ハ日本海藻圖說第一卷九一頁ニ在リ。

ハ軟カキ軟骨質ニシテ乾燥スルトキハ體ハ著シク萎縮シ紙ニ附着スルコト充分ナラズ。

產地： 外海ニ面セル波ノ靜ナル所ノ岩石ニ生ジ、干潮線以下 1 m. 程ノ所ニ在リ。 相模、伊豆、紀伊。 果實： 春季。

第 CLXI 圖版. 1: つるしらも, *Gracilaria Chorda* Holm., ノ實ナキ體, $\frac{1}{2}$ —2: 囊果ヲ有スル枝, $\frac{1}{2}$ —3: 體ノ横斷面, $\frac{2.5}{1}$ —4: 横斷面ノ一部廓大, $\frac{2.5}{1}$ —5: 四分胞子, $\frac{2.5}{1}$ —6: 囊果ノ縦斷面, $\frac{2.5}{1}$.

Halymenia Harveyana J. Ag. .

Nom. Jap.: *Isonohana*.

PL. CLXII, Fig. 1 3.

Halymenia Harveyana J. Ag. Anal. Alg. 1892, p. 55; De Toni Syll. Alg. IV, p. 1539.—*Halymenia Floresia* (non. Ag.) Harv. Phyc. Austr. t. 214.

Some six herbarium-specimens before us, all destituting of the lower portions, the largest one about 15 cm. high. *Fronde* plano-compressed, provided with a broadly linear principal lamina or rachis, 5–7 mm. broad (in dried specimens), either simple or forked or somewhat multifid and is set on both sides with approximate or subdistant lateral branches or pinnae which are furnished with the second or third or even fourth series of lesser divisions, disposed in a similarly pinnate manner, becoming narrower in order. All branches stand on roundish axils and their apices are very

acute with ultimate divisions much acuminate like teeth. Margin in some specimens is quite flat and entire or little provided with teeth, in others slightly serrated. In ours, the surface is mostly free from proliferations, but in one or two specimens a few, small, short, denticular processes are emitted. The form, ramification and size of fronds are much varied according to the specimens. No fruit seen in ours. The interior of frond is less densely traversed by filaments and is somewhat tubular, externally covered by a cortical layer consisting of 5-6 rows of cells. *Colour* a bright pinkish red, soon discharged in fresh water in decomposition, as it is seen from the decaying of colour into greenish-yellow as well as from red coloring of paper on which the frond is mounted. *Substance* thin and very soft gelatinous. In drying the plant most closely adheres to paper.

Hab.: Ryukyu Isl. (Okinawa), Bo (Prov. Satsuma).

On comparing with *Halymenia formosa* Harv. the present plant is much thinner in substance, much lighter in color, much more dentate rather than spinose and ramification is more pinnate.

PL. CLXII, fig. 1-3. Fig. 1: frond of *Halymenia Harveyana* J. Ag., $\frac{1}{1}$.—Fig. 2: cross-section of frond, $\frac{48}{1}$.—Fig. 3: portion of the cross-section, $\frac{353}{1}$.



Halymenia Harveyana J. Ag. いそのはな Fig. 1-3
Microcladia dentata Okam. Sp. nov. あまぢさえだ Fig. 4-9.

Halymenia Harveyana J. Ag.*

いそのはな 岡村 稱

第 CLXII 圖版, 1-3 圖.

六個許ノ措葉標品アルノミニシテ皆下部缺損シ其最大ナルモノ約 15 cm. ノ高サアリ、體ハ扁平ニシテ濶キ線狀ノ葉ノ如キ主ナル軸アリテ 5-7 mm. ノ幅ヲ有シ(乾燥品ニテ)、單條又ハ分叉シ或ハ稍多數ニ裂ケ兩緣ヨリ相接近セル或ハ稍離レタル枝即チ羽枝ヲ出シ此羽枝ハ更ニ枝ヲ分チテ第二、第三又ハ第四位マデサヘノ小枝ヲ同ジク羽狀ニ分枝シ、枝ハ末ニ至ル程漸々狹細トナル。枝ハ總テ圓キ脈ヲ以テ立チ、枝端ハ極メテ尖銳ニシテ最末ノ小枝ハ齒狀ヲナス。緣邊ハ或標品ニテハ全ク扁平ニシテ全緣又ハ僅ニ齒狀片ヲ存シ、或ハ少シク鋸齒狀ヲナス。表面ハ概ネ剝出ノ枝ナシト雖モ、一二ノ標品ニ於テ小サキ短キ齒狀片ノ僅ニ發生セルアリ。體ノ形狀、分枝及大サハ標品毎ニ著シク變化ス。果實ハ予ノ標品ニハ存セズ。體ノ内部ハ緩ク絲狀細胞ヲ存シテ稍中空ノ如ク、外部ハ皮層ヲ以テ蔽ハレ、皮層ハ 5-6 層ノ細胞ヨリ成ル。色ハ美シキ淡紅色ニシテ、淡水ニ浸ストキハ直ニ分解シテ色素ヲ溶出スルモノ、如シ、其ハ標品ノ色ノ淡黃綠色ヲナセルト其臺紙ヲ淡紅色ニ染メタルモノアルトヲ以テ其然ルヲ知ル。質ハ薄クシテ極メテ軟弱粘質ナリ。乾燥スルトキハ體ハ密ニ紙ニ附着ス。

產地：琉球；沖繩(金城氏)、國頭(黑岩氏)；薩摩坊ノ津(中野氏?)

分布：ニウフホルランドノ南海；布哇島(?)

Halymenia formosa, つゝれぐさ(第 LXXII 圖版)ハ本種ト近縁ノ

* *Halymenia* 屬ノ性質ハ第一卷 175 頁ニ在リ。

モノナレドモ本種ハ之ト比スルニ質遙ニ薄ク、色更ニ淡ク、枝端又ハ齒片ナドモ刺狀ト云フヨリハ寧ロ齒狀ト稱スベク、枝モ其ヨリハ遙ニ羽狀ナルヲ以テ異ナリトス。

第 CLXII 圖版. 1-3 圖. 1: いそのはな, *Halymenia Harveyana* J. Ag. ノ體, $\frac{1}{1}$.—2: 體ノ横斷面, $\frac{1}{1}$.—3: 横斷面ノ一部, $\frac{25}{1}$.

Microcladia dentata Okam. sp. nov.

Nom. Jap.: *Kosuji-sawda*.

PL. CLXII, Fig. 4-9.

Diagn.: Fronds narrow-linear, compressed, membranous, disticho-alternately pinnate with widely parted, slightly flexuose: branches standing on round axils, arranged in paniculate-cymose manner, and loaded with alternate sharpish ramuli which have ramelli or lacinulae appearing like minute teeth. Tetraspores in double rows in ramuli.

Hab.: Shimabara (Prov. Hizen), Kagoshima (Prov. Satsuma).

Descrip.: Fronds narrow-linear, ancipito-compressed, membranous, alternately pinnate, erect or ascending from decumbent lower portions, where the plant emits monosiphonous jointed root-fibres from the under-surface. Branches distichous with patent and rounded axils, slightly flexuose, arranged in paniculato-corymbose manner with longer ones below and becoming gradually shorter upward. They are

loaded in their whole length with alternate branchlets which have alternately arising ramelli or lacinulae. Lacinulae appear like marginal teeth, remain simple, bifid or trifid and end in sharpish apices. The shorter lacinulae or ramelli appear like teeth as just spoken of, but when elongated they develop into ramuli which have teeth-like ramelli or lacinulae in turn. Plant attains 4-6 cm. in height with the breadth of about 0.3-0.7 mm. in segments. *Tetraspores* regularly arranged in double rows in ramuli, roundish. *Colour* red. *Substance* membranous and the plant does not adhere to paper in drying.

A close affinity of the present plant with *Microcladia elegans* Okam. (Vol. I, p. 1-4, PL. I, fig. 1-10) is beyond any doubt. The difference between the two related plants is found in the absence of dichotomo-flabellate pinnae in the present plant.

PL. CLXII, fig. 4-9. Fig. 4: sterile frond of *Microcladia dentata* Okam., $\frac{1}{1}$.—Fig. 5: branch, $\frac{7}{1}$.—Fig. 6: cross-section of frond; *a*, axial cell; $\frac{220}{1}$.—Fig. 7: rootfibres (the figure ought to be inverted), $\frac{48}{1}$.—Fig. 8: apices of branches, $\frac{353}{1}$.—Fig. 9: marginal lacinulae, $\frac{353}{1}$.

Microcladia dentata Okam.* 新種

こすじさえだ 岡村 稱

第 CLXII 圖版, 4-9 圖.

性質: 體ハ細キ線狀ニシテ扁壓, 膜質, 兩縁ヨリ羽狀ニ互生シ, 廣開セル枝ヲ出シ, 枝ハ輕ク雁木狀ニ屈曲シ腋圓ク, 複總

* *Microcladia* 屬ノ性質ハ第一卷第二頁ニ在リ.

狀様聚繖狀ニ分岐シ、縁邊ニ沿フテ尖銳ナル小枝ヲ互生ス；小枝ハ更ニ小ナル小枝即チ小齒片ヲ存シ、其小枝ハ小サキ齒ノ如ク見ユ。四分胞子ハ小枝ニ二列ニ存ス。

產地：肥前島原、鹿兒島灣。

體ハ細キ線狀ニシテ扁壓、兩縁ニ扁ク、膜質ニシテ、羽狀ニ互生シ、下部ノ傾臥シタル部分ヨリ直立シ又ハ斜上シ、其傾臥セル部分ノ裏面ヨリ單管絲狀ノ根ヲ出シテ他物ニ附着ス。枝ハ體ノ兩縁ヨリ分枝シ、廣開シ、腋圓ク、稍雁木狀ニ屈折シ、下部ノ枝ハ長ク漸次上方ニ短クシテ複總狀様聚繖狀ニ分岐ス。枝ハ下部ヨリ上部マデ小枝ヲ互生シ、其小枝ニハ更ニ次位ノ小枝即チ小齒片ヲ互生ス。此末位ノ小枝ハ縁邊ニアル齒片ノ如ク見ユ、時ニ單條ニ時ニ二裂又ハ三裂シ尖銳ニ終ル。末位ノ小枝ハ其短キ時ハ小齒片ノ如キ觀アリト雖モ伸長スルトキハ小枝トナリテ又其縁邊ニ次位ノ小枝ヲ附ス。體ハ高サ 4-6 cm. ニ達シ幅 0.3-0.7 mm. アリ。四分胞子ハ小枝ニ正シク縦ニ二列ニ存シ、球狀ナリ。色ハ紅色。質ハ膜質ニシテ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

本種ガさえた、*Microcladia elegans* Okam., (第一卷 1-4 頁, 第 1, 圖版, 1-10 圖)ト極メテ近親ノ類縁ヲ有スルコトハ些ノ疑ヲ容ル、餘地ナシ。然レドモ本種ニ於テハさえたノ如ク扇狀ヲナセル又狀ノ羽枝ナキニ依テ差アルヲ見ルベシ。

第 CLXII 圖版, 49 圖. 4: *Microcladia dentata* Okam., こすじさえた, ノ實ナキ體, $\frac{1}{1}$ —5: 枝, $\frac{7}{1}$ —6: 體ノ横斷面; α , 中軸, $\frac{2.2.0}{1}$ —7: 根(圖ハ轉倒セリ), $\frac{2.2}{1}$ —8: 枝端ノ成長點, $\frac{2.5.3}{1}$ —9: 縁邊ノ小齒片, $\frac{2.5.3}{1}$.





K. Okam del.

9 1 6 2 10 7 3 11 12 8 4 5
Elachista fucicola (Vell.) Aresch. a typica. なみまくら

Elachista fucicola (Vell.) Aresch. "**typica** Rosenv.

Nom. Jap.: *Nami-makura*.

PL. CLXIII.

Elachista fucicola (Vahl.) Aresch. "*typica* Rosenv. *Grünl. Havalg.* p. 878.—*E. fucicola* (Vahl.) Aresch. *Phyc. Scandin.* p. 377 (155) tab. IX, fig. c; Kjellm. *Alg. Arctic Sea* p. 314 (253); J. Ag. *Sp. Alg.* I, p. 12; Id. *Till Alg. Syst.* IV, p. 14; Harv. *Phyc. Brit.* t. 240; Id. *Ner. Bor. Amer.* Vol. 1, Pl. XI b; Farlow *Mar. Alg. New Engl.* p. 81, Pl. 7, fig. 3; De Toni *Syll. Alg.* III, p. 442; Börgesen *Mar. Alg. of the Faeroes*, 1902, p. 434; Hauck *Meeresalg.* p. 353, f. 148.—*Phycophila ferruginea*, *Agardhii*, *rigida*, *gracilis*, *vulpina*, *fucorum* &c, Kuetz. *Tav. Phyc.* VII, t. 96, 97, 98, 99.

Fronds tufted, globular, 5–12 mm. in diam., basal portion distinct, subglobose (2–5 mm. in diam.), exerted filaments rather stiff about 40 μ thick, gradually alternated at base, obtuse at apex, with cells of the lower portion about half as long as thick or little longer in the upper portion; paraphyses slightly curved, clavate, with upper articulations submoniliform; unilocular sporangia oblong or elongated-obovate; pleurilocular sporangia linear or filiform; often two sorts of sporangia mixed in one and the same frond. *Colour* yellowish brown. *Substance* soft and rather gelatinous.

Hab.: On various kinds of Sargassum. Prov. Iwaki, Prov. Rikuzen. *Fruits*:—August in Prov. Iwaki.

PL. CLXIII. Fig. 1: fronds of *Elachista fucicola* of several

sizes grown on Sargassum, $\frac{1}{4}$.—Fig. 2: vertical sections of two fronds; one with the basal portion, 2 mm. in diam., the other 5 mm.; $\frac{1}{4}$.—Fig. 3: vertical section of frond, magd. $\frac{7}{8}$.—Fig. 4: portion of the vertical section of frond magd., showing two exserted filaments and paraphyses, $\frac{11}{16}$.—Fig. 5: one of exserted filaments; the end marked with \times is to be connected to the part with the same mark; the line $s s$ indicates the upper limit of the basal portion, $\frac{11}{16}$.—Fig. 6: pleurilocular sporangia, $\frac{22}{1}$.—Fig. 7: unilocular sporangium and pleurilocular sporangia, in one and the same frond; the former is fewer in number than the latter, $\frac{22}{1}$.—Fig. 8: pleurilocular sporangia, with an exserted filament which is about 40μ thick, $\frac{22}{1}$.—Fig. 9-10, unilocular sporangia, one is empty, $\frac{22}{1}$.—Fig. 11: unilocular and pleurilocular sporangia mixed, $\frac{22}{1}$.—Fig. 12: pleurilocular sporangia, partly emptied, $\frac{35}{1}$.

Elachista Duby 1832.

なみまくら屬

ELACHISTACEÆ. なみまくら科

體ハ小ニシテ毛筆狀又ハ枕狀ヲナシ絲ヨリ成ル。絲ハ只體ノ下部ニ於テノミ分枝シー列ノ細胞ヨリ成リ、二箇ノ部分ニ分ツベク、其上部ハ互ニ相離レテ類化層ヲ形成シ、其下部ハ多少密ニ結合シ、時ニハ殆ド「バレンキマ」狀ニ結合シテ基礎部又ハ中心部ヲナシ、其表面ヨリ概ネ略ボ茄子狀ノ單子嚢及絲狀ノ「ガメート」囊ヲ生ズ。「バラフ井シス」ハ之ヲ存シ、時ニ多數ナリコトアリ。營養體ノ分裂ハ他ノ藻ノ體內ニ分岐シテ匍匐スル部分ヨリ新シキ體ヲ形成シテ以テ成ル。

約十種アリテ多數ハ北部太西洋ニ産ス;其他北氷洋,太平洋ノ北部及南部,地中海,及印度洋ニモアリ。E. fucicola (Vell.) Aresch. ハ其最モ能ク知ラレタル種類ナリ、一屬ノ名ハ Elachistos (最小,最短)ヨリ成ル。

Elachista fucicola (Vell.) Aresch. α typica Rosenv.

なみまくら 岡村 稱。

第 CLXIII 圖版。

體ハ叢生シ,球狀,直徑 5-12 mm.,基部明ニシテ稍球狀ヲナス(直徑 2-5 mm.),球狀部ヨリ外部ニ出タル絲ハ幾分硬ク,約 40 μ 太ク,基部ノ方ニ漸次減殺シ,頂端鈍圓ニシテ下部ノ細胞ハ其太サノ約半分長ク,上部ノモノハ夫ヨリ幾分長シ;「バラフ井シス」ハ少シク屈曲シ,棍棒狀,上部ノ細胞ハ稍念珠狀ニ連ル;單子囊ハ長橢圓形又ハ長味アル倒卵形ナリ;複子囊ハ線狀又ハ絲狀ナリ;往々同一體ニ單複兩様ノ子囊ヲ存ス。色ハ黃褐色ナリ。質ハ軟クシテ稍粘質ナリ。

產地:沿岸及稍深所ニ生ズル諸種ノほんだわら類ノ枝上ニ附着ス。磐城,陸前。胞子:八月(磐城)

分布:北氷洋,ノースシー,太西洋。

本植物ハ多年生ニシテ秋季其長キ遊離セル毛ノ落ルトキハ圓キ體トナリテ全ク別物ノ如キ觀ヲ呈ス;之ヲ E. globosa トシテ嘗テ別種トシタルコトアリ。又本植物ハ此處ニ圖セル如ク圓キ基部ヲ形成スルアリ又遊離セル毛ノミヨリナレルモノアリ。

第 CLXIII 圖版。 1: Elachista fucicola α typica ノ大小ノ形ヲ示ス。
1.—2: 二個體ノ縱斷;一個ノ基部ハ直徑 2 mm. 今一ノモノハ 5°

mm.; $\frac{1}{1}$.—3: 體ノ縦斷面, $\frac{7}{1}$.—4: 體ノ縦斷面ノ一部ニシテ基部ヨリ出タル二條ノ絲ト多數ノ「パラフ井シス」トヲ示ス, $\frac{11.0}{1}$.—5: 基部ヨリ出タル絲ノ一ニシテ×印ノ部ヲ以テ相接續ス; ssノ線ハ基部ヲナセル組織ノ上方ノ區域ヲ示ス, $\frac{11.0}{1}$.—6: 複子嚢 $\frac{12.0}{1}$.—7: 單子嚢ト複子嚢ト同一體ニ生ズルモノ、但シ前者ハ後者ヨリ少數ナリ, $\frac{22.0}{1}$.—8: 複子嚢ト基部ヨリ出タル一條ノ絲(約40 μ 太シ)トヲ示ス, $\frac{22.0}{1}$.—9-10: 單子嚢、一ハ内容物ヲ失ヒタルモノ, $\frac{22.0}{1}$.—11: 單子嚢ト複子嚢ト混在シタルモノ, $\frac{22.0}{1}$.—12: 複子嚢其一部ハ空虚トナリタリ, $\frac{25.3}{1}$.

Chnoospora obtusangula (Harv.) Sond.

Nom. Jap.: *Mura-chidori*.

PL. CLXIV, Fig. 1-9.

Chnoospora obtusangula (Harv.) Sond. Alg. trop. Austr., p. 45; De Toni Syll. Alg. III, p. 465; Id. Phyc. Jap. Nov., 1895, p. 54.—*Dictyota obtusangula* Harv. Char. new Alg., 1859, p. 329, no. 14; Kuetz. Tab. Phyc. IX, t. 28, f. 2.

Known only in herbarium-forms. *Fronds* narrow linear, thick and succulent as it is seen from the restored states in reimmersing dried fronds, elongated, very distantly forked below, divaricately dichotomous with very wide and round axils, becoming denser and more irregularly dichotomous toward apices with short and slender segments.

I have some young and small depressed intricate fronds



Chnoospora obtusangula (Harvey) and むらちどり Fig. 1-9.
Gouldia, Cystodermis, Setchell and Gardner. めづふくろ Fig. 10-12

collected at Ogasawara-jima, which have basal segments united to each other by hair-like roots emitted from epidermal cells. From structure of the frond and its habit I think the Ogasawara-specimens to be young fronds of the present plant; and if this judgement does not fail the basal portion of the present plant should be said to be the intricate and coalesced mass. In one of specimens from Ryukyu, I found fruits appearing like the same construction as those of *Chnoospora fastigata* J. Ag. illustrated by Barton in Journ. Linn. Soc. Bot. Vol. 13, p. 507-508 (1897-98) Pl. 28, fig. 4-5. Colour dull yellowish brown in dried state. Substance membranous in dried frond, and the plant does not adhere to paper in drying.

PL. CLXIV, fig. 1-9. fig. 1: frond of *Chnoospora obtusangula* (Harv.) Sond., $\frac{1}{1}$.—Fig. 2: sterile frond from Ogasawara-jima, $\frac{1}{1}$.—Fig. 3: cross-section of the frond illustrated in fig. 2, $\frac{12}{1}$.—Fig. 4: surface view of frond from Ryukyu, $\frac{220}{1}$.—Fig. 5: apical portion of the same, $\frac{48}{1}$.—Fig. 6: cross-section of frond, $\frac{48}{1}$.—Fig. 7: portion of the cross-section, $\frac{353}{1}$.—Fig. 8: portion of longitudinal section seen from the inner side, $\frac{353}{1}$.—Fig. 9: fruits in fronds from Ryukyu, $\frac{336}{1}$.

Chnoospora J. Agardh 1847.

むらちどり属.

ENCCELIAEAE. ふくろのり科.

體ハ圓柱狀乃至扁壓、屢叉狀ニ分岐シ、中肋ナク、二層ヨリ成リ、内層ハ多角形ノ長味アル細胞ヨリ成リ、漸次外方ニ小サ

ク、外層ハ小サキ一二層ノ細胞ヨリ成ル。「ガメート」囊ハ棍棒狀又ハ圓柱狀ニシテ念珠狀ニ關節シ密ニ相集合シ「ガメート」囊群ハ體ノ表面ニ少シク隆起シ、表皮細胞ヨリ形成セラル。

専ラ太平洋ノ暖部ニ産シ3-4種アリ。一屬ノ名ハ *Chnous* (枕ノ詰メ物)ト *spora* (孢子)トヨリ成ル。

Chnoospora obtusangula (Harv.) Sond.

むらちどり 岡村 稱

第 CLXIV 圖版, 1-9 圖。

唯措葉トシテ知レルノミ。體ハ狭キ線狀ニシテ、乾燥標品ヲ水ニ浸シタル所ヨリ見ルニ、太ク且多肉ナルモノ、如ク、長ク、下方ニハ甚シク距リテ分岐シ、廣ク擴ガリテ又狀ニ分レ、腋ハ廣クシテ圓ク、頂端ノ方ニハ漸次密ニシテ一層不規則トナリ各部ノ枝短クシテ細シ。予ノ許ニ小笠原島ニテ採集サレタル幼キ小サキ壓潰シタル如キ形セル標品アリテ體ハ又狀ヲナセル線狀ノ枝ヨリ成リテ下部ハ錯綜シ其部ハ表皮細胞ヨリ根毛ノ如キ根ヲ出シテ互ニ癒着ス。其容子ト體ノ構造トヲ以テ見ルニ此小笠原島産ノモノハ本植物ノ幼キモノナリト思惟ス;若シ果シテ予ノ考フル如クナレバ本植物ハ互ニ癒着シテ錯綜スル基部ヲ以テ立ツモノナラザルベカラズ。琉球産ノ標品中ニ Barton 女史ガ Journ. Linn. Soc. Vol. 13, p. 507-508, 第 28 圖版 4-5 圖ニ圖說シタル *Chnoospora fastigiata* J. Ag. ノ實ト同様ノ構造ノ如ク見ユル實ヲ見タリ。色ハ乾燥シタルモノニテ暗褐色ナリ。質ハ乾燥體ニテ膜質ニシテ體ハ紙ニ附着セズ。

產地: 琉球, 小笠原島?

分布：フレンドリー島 (Harvey), ボートデニソン.

第 CLXIV 圖版, 19 圖. 1: *Chnoospora obtusangula* (Harv.) Sand.
ノ體, $\frac{1}{1}$.—2: 小笠原島産ノ實ナキ體, $\frac{1}{1}$.—3: 第二圖ニ示シタル
體ノ横斷面, $\frac{1,2}{1}$.—4: 琉球産ノ體ノ表面, $\frac{2,2}{1}$.—5: 全上ノ頂部, $\frac{1}{1}$.
—6: 體ノ横斷面, $\frac{1,2}{1}$.—7: 横斷面ノ一部, $\frac{2,2}{1}$.—8: 體ノ縦斷面ヲ
體ノ内部ヨリ見タルモノ, $\frac{2,2}{1}$.—9: 琉球産ノ體ニ於ケル果實,
 $\frac{2,2}{1}$.

Coilodesme Cystoseirae (Rupr.) Setch. and Gard.

Nom. Jap.: *Yezofukuro*.

PL. CLXIV, Fig. 10-13.

Coil. Cystoseirae (Rupr.) Setch. and Gard. Alg. N. W.
Am. p. 241; Setch. Alg. nov. et min. cognitae I (Calif. Publ.)
Bot., Vol. 4, n. 14, 1912, p. 232; Yendo Notes on Alg. new
to Jap. (Bot. Mag. Tokyo, Vol. XXIII, n. 270, p. 122).—
Asperococcus Cystoseirae Rupr. Tange d. och. Meer. p. 370.
—*Coilodesme linearis* Saund. Harr. Alask. Exped. Alg. p. 421,
Pl. 48.—*Encœlium?* *Cystoseirae* Rupr. in Kuetz. Tab. Phyc.
Bd. IX, p. 4, tab. 6, f. 4; De Toni Syll. Alg. III, p. 496.

Fronds simple narrow-linear when young, bullato-cylindrical at beginning, but more or less collapse later, thin-walled and wrinkled, obtuse at apex or often splitted, with a short abrupt stem, light yellowish brown, 10-15 cm. long, 5-13 mm. broad, firmly adhering to paper in drying.

Hab.: Epiphytic on the frond of *Cystophyllum hakodatense* Yendo. Akkeshi.

Our plants in an external appearance somewhat resemble *Coilodesme Californica* (Rupr.) Kjellm. (Syn. *C. amplissima* Setch. n. sp.) illustrated in Saunders Phycological Memoirs p. 160, Pl. XXIX, fig. 1-3, but it differs from ours by having young obovato-oblong fronds as illustrated in Saunders *l.c.* instead of linear or cylindrical. Judging from Setchell's Analytical Key of the species of the genus (Alg. nov. et min. cogn. I) and from its point of distribution, habits etc. I think the present plant may be safely referred to this species.

PL. CLXIV, fig. 10-13. Fig. 10: fronds of *Coilodesme Cystoseirac* (Rupr.) S. and G. on *Cystophyllum hakodatense*, $\frac{1}{1}$.—Fig. 11: portion of longitudinal section of frond, $\frac{353}{1}$.—Fig. 12: longitudinal section viewed from the inside of frond, $\frac{152}{1}$.—Fig. 13: cross-section of frond bearing sporangia, $\frac{353}{1}$.

Coilodesme Stroemf. 1886.

糸ぞふくろ屬.

ENCCELIACEAE. ふくろのり科.

體ハ棍棒狀又ハ「バンド」狀、中空、圓盤狀根ヲ以テ立チ、下部短キ實質ノ莖ヲナシ、二層ヨリ成ル;内層ハ橢圓形乃至稍球狀ノ數層ノ細胞ヨリ成リ、膜厚ク、稀薄ナル色素體ヲ藏シ、漸次外方ニ小ナリ;外層ハ多少正シク放射狀ニ列セル小ナル—二層ノ細胞ヨリ成リ、稍「バレンキマ」組織ノ如ク集リ、單子囊ヲ此層中ニ存ス。單子囊ハ個々ニ散在シ、卵形ニシテ、時ニ少シク體

ノ表面上ニ其頂端ヲ隆起ス。「ガメート」囊ハ詳ナラズ。「バラ
フ井シス」ハ之ヲ欠ク。

専ラ太西洋及太平洋ノ北部ニ産ス；既知ノモノ三種ノミ
ナリ。一屬ノ名ハ *Coilos* (中空) ト *desmos* (バンド) トヨリ成ル。

Coilodesme Cystoseirae (Rupr.) Setch. and Gard.

ゑぞふぐろ 岡村 稱

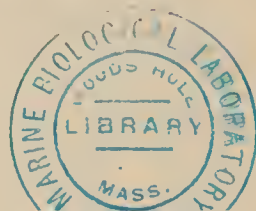
第 CLXIV 圖版, 10-13 圖。

體ハ單條, 幼時ハ細線狀, 始メ圓柱狀ニシテ中空, プクヅク
ト膨レ, 後ニハ多少潰レ, 膜薄クシテ皺立チ, 頂端鈍圓又ハ往々
裂ケ, 體ノ下部急ニ短キ莖トナリ, 色淡黃褐色ニシテ, 10-15 cm.
長ク, 5-13 mm. 太ク, 乾燥スルトキハ密ニ紙ニ附着ス。

產地: うがのもくノ體上ニ附着ス。厚岸。

本植物ハ外形ニテハ稍 Saunders ノ *Phycological Memoirs*, 160
頁, XXIX 圖版, 1-3 圖ニ圖說セラレタル *Coilodesme Californica*
(Rupr.) Kjellm (= *C. amplissima* Setch. 新種ニ類似スト雖モ該植物
ハ其幼キ時ハ線狀又ハ圓柱狀ナラズシテ Saunders ノ圖ニ見
ルカ如ク倒卵形—長楕圓形ナルヲ以テ本種ト異ナリトス。Set-
chell ノ此屬ノ種類ノ檢索表ト分布ノ點及體ノ形狀等ヨリ考
フルニ茲ニ圖說シタル植物ヲ本種ニ當テタルハ誤ナラズト
信ズ。

第 CLXIV 圖版, 10-13 圖。10: うがのもくノ上ニ附着セル
Coilodesme Cystoseirae ノ體, 1.—11: 體ノ縱斷面ノ一部, $\frac{3.5.3}{1}$ 。—12:
縱斷面ヲ其内面ヨリ見タルモノ, $\frac{1.5.2}{1}$ 。—13: 體ノ横斷面ニテ二
個ノ子囊ヲ示ス, $\frac{3.5.3}{1}$ 。



Ulva conglobata Kjellm. and f. *densa* Kjellm.

Nom. Jap.: *Botan-acwosa*.

PL. CLXV, Fig. 1-10.

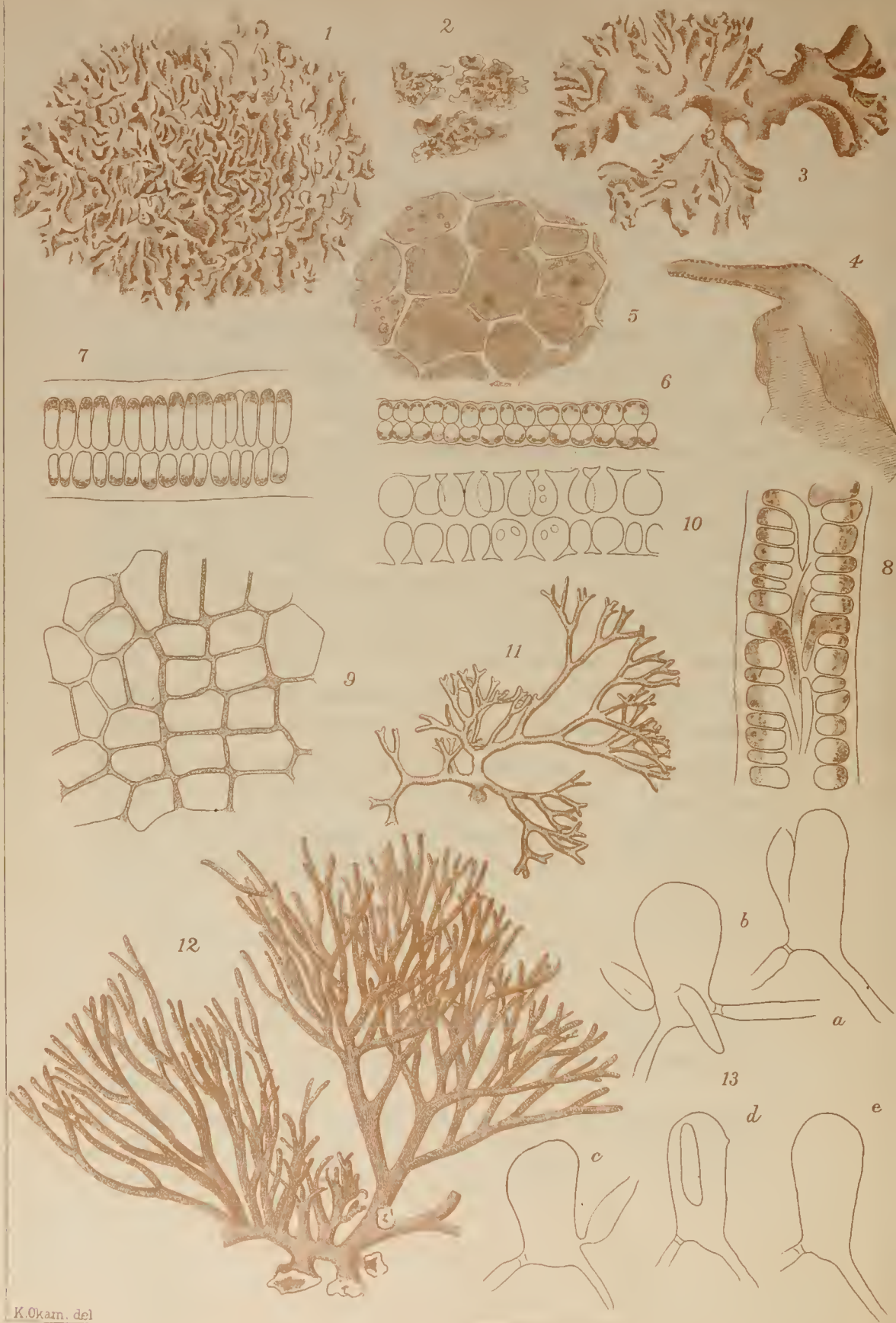
Ulva conglobata Kjellm. Marina Chlorophyc. fr. Japan 1897, p. 10, tab. 2, f. 1-7, tab. 3, f. 9-14.

Fronde minor, usually 2-4 cm. high, 100-125 μ thick at the basal portion which becomes subcartilaginous later, upper portion thin and membranous, 30-50 μ thick, bright green, not mucose, with very short stipe, caespitose and expanding in almost circular mass, branching or parting from base into many lobes which expand to oval or oblong segments, often much dilated, more or less decomposed with lobules or lacinulae and very much undulato-crisped, cucullated, and not pertused with foramens: cells in the basal portion prismatic and lumen of cells $1\frac{1}{2}$ -2 times high as thick in transverse section with thickened outer walls, those of upper and marginal portions subequal to or little higher than broad: fertile cells slightly higher than the vegetative cells of that portion, afterward becoming a little prominent with aperture.

f. *densa* Kjellm. Minor, forming globular mass of about 1 cm. diameter, rather thick membranous.

Hab.: On rocks near high tide. Prov. Satsuma, Amakusa-Isl., Goto Isl., Shiwono-misaki, Prov. Sagami and Boshyu.

Mr. Yendo is of opinion that the present species is same as *U. rigida* Ag. (Yendo: Notes on Algae new to Japan, V,



K. Okam. del

Ulva conglobata Kjellm. and *f. densa* Kjellm. ぼたんあをさ. Fig. 1-10.

Codium tenue Kuetz. いとみろ Fig. 11-13.

—Bot. Mag. Tokyo. Vol. XXX, p. 243). I do not mind here to enter into the discussion of his identification, but simply describe and illustrate the plant with the specific name formerly offered by Kjellman.

PL. CLXV, fig. 1-10. fig. 1: fronds of *Ulva conglobata* Kjellm., $\frac{1}{1}$.—Fig. 2: f. *densa*, $\frac{1}{1}$.—Fig. 3: one of crisped fronds isolated and extended, $\frac{1}{1}$.—Fig. 4: longitudinal section of the basal portion of f. *typica*, $\frac{22}{1}$; thickness of the membranous portion 100 μ .—Fig. 5: surface-view of the portion near base, $\frac{567}{1}$.—Fig. 6-8: cross-sections of several portions of one and the same frond, upper, middle and basal portions respectively, and 37 μ , 103 μ , 100-125 μ thick also respectively, $\frac{220}{1}$.—Fig. 9: surface-view of frond to show the thickness of cell wall, $\frac{567}{1}$.—Fig. 10: cross-section of fertile portion of frond, 47 μ thick, $\frac{220}{1}$.

Ulva (L.) Wittr.

あをさ属.

ULVACEAE. あをさ科.

體ハ綠色又ハ稍褐色,膜狀,他物ニ附着シ,二層ヨリ成ル;細胞ハ多角形ニシテ體ノ下部ノモノハ各棍棒狀ニ長ク伸ビテ無色ノ絲ヲ成シ此モノ相集リテ極メテ短キ莖ヲ形成シ其末端ヲ以テ附着ス. 色素體ハ一個ニシテ板狀ヲナシ細胞ノ内面ニ沿ヒ,通常一箇又ハ二三ノ「ピレノイド」ヲ藏ス. 細胞分裂ハ根ヲ出セルモノ、外總テ他ノ細胞之ヲナシ體面ニ直角ノ二方面ニ分裂ス,然レドモ各部同様ニ分裂スルニアラズ. 「ガメート」ハ二個ノ纖毛ヲ有シ,其接合ハ或種ニ於テ見ルベシ.

接合シタル胞子ハ短キ一列ノ絲ニ伸ビ、後分裂シテ葉狀ニ擴ガリ二層ノ細胞ヨリ成レル面ヲナス。

約八種アリ、世界殆ド各地ノ海水並ニ淡鹹水ニ産ス；屬ノ名ハ Celtic 語ノ Ul(水)ヨリ起レルモノナリトノ說ナリ。

Ulva conglobata Kjellm. and f. *densa* Kjellm.

ぼたんあをさ 岡村 稱

第 CLXV 圖版, 1-10 圖.

體ハ小ニシテ、通常 2-4 cm. 高ク、下部ハ 100-125 μ 厚ク、其部ハ後稍軟骨様トナリ、上部ハ薄ク膜質ニシテ 30-50 μ 厚ク、鮮綠色ニシテ粘質ナク、無莖ニシテ叢生シ、略ボ圓キ塊ヲナシテ擴ガリ、縁邊ヨリ殆ド基部附近マデ裂ケ又ハ分枝シ多數ノ裂片ヲナシ、裂片ハ卵形又ハ長橢圓形ニ開張シ、往々更ニ大キク擴ガリ、多少再三小裂片ヲナシテ分裂シ、甚シク波縮シ、花瓣ノ如ク彎曲シ孔アルコトナシ；下部ノ細胞ハ稜柱狀ニシテ細胞腔ハ太サノ一倍半乃至二倍長ク、外部ノ細胞膜ハ厚ク、上部及縁邊ノ細胞ハ幅ト同ジク又ハ少シク幅ヨリ高ク、實ヲ熟スル細胞ハ其部ノ營養細胞ヨリ少シク高ク、後上部ニ開口シテ少シク表面ヨリ隆起ス。

f. *densa* Kjellm. 體ハ極メテ矮小ニシテ約 1 cm. 程ノ團塊ヲナシ稍厚シ。

產地：高潮線ニ近キ岩石上ニ在リ。薩摩、天草島、五島、潮ノ岬、相模及房州。 f. *densa* ハ天草島、潮ノ岬。

遠藤氏ハ本種ヲ以テ *Ulva rigida* Ag. ト同一種ナリトノ說ヲ有ス (Notes on Algae new to Japan, V, 植物學雜誌第三十卷 243 頁)。予ハ茲ニ氏ノ說ノ良否ヲ論ズルコトヲナサズ只先ニ

Kjellman 氏ガ新種トシテ發表シタル名ヲ以テ此植物ヲ圖說セルノミ。

第 CLXV 圖版, 1-10 圖. 1: ほたんあをさ, *Ulva conglobata* Kjellm. ノ體, $\frac{1}{1}$.—2: . *densa*, $\frac{1}{1}$.—3: 體ノ一ヲ分離シテ擴ゲタルモノ, $\frac{1}{1}$.—4: *f. typica* ノ體ノ下部ノ縱斷面, $\frac{22}{1}$; 膜狀部ノ厚サハ $100\ \mu$.—5: 下部ニ近キ部分ノ表面, $\frac{50}{1}$.—6-8: 同一體ノ上部, 中部及下部ノ橫斷面ニシテ夫々 $37\ \mu$, $103\ \mu$, $100-125\ \mu$ ノ厚サヲ有ス; $\frac{22}{1}$.—9: 體ノ表面ニシテ細胞膜ノ厚サヲ示ス, $\frac{50}{1}$.—10: 實ヲ有スル部分ノ橫斷面, 厚サ $47\ \mu$, $\frac{22}{1}$.

Codium tenue Kütz.

Nom. Jap.: *Itomiru*.

Codium tenue Kuetz. Tab. Phyc. VI, t. 95 (ut var. *Codium tomentosum*); J. Ag. Till. Alg. Syst. VIII, p. 41; De Toni Syll. Alg. I, p. 493; Kjellm. Mar. Chlorophy. fr. Jap. p. 34.

Fronds small, cylindrical, more or less regularly dichotomo-fastigiate, 4-8 cm. high, gradually tapering upward, emarginate or bifid at apex, attached to substratum at several points of subdecumbent basal portion, 2-3 mm. thick in thicker part, with very tender surface, utricles obovate, 0.30-0.36 mm. high, $1\frac{1}{2}$ -2-3 times as long as broad, with very obtuse and thin walled apices. Sporangia oblong or lanceolate in outline set near the base of utricles. *Colour* herbaceous green. *Substance* soft and the plant closely adheres to paper in drying.

Hab.: Miyako-shima (Warb.), Amakusa-shima, Shiwo-no-nisaki.

PL. CLXV, fig. 11-13. Fig. 11-12: two fronds of *Codium tenue* Kuetz., 1.—Fig. 13: several forms of utricles bearing sporangia, 1³.

Codium tenue Kuetz.

いとみる 岡村 稔

第 CLXV 圖版, 11-13 圖.

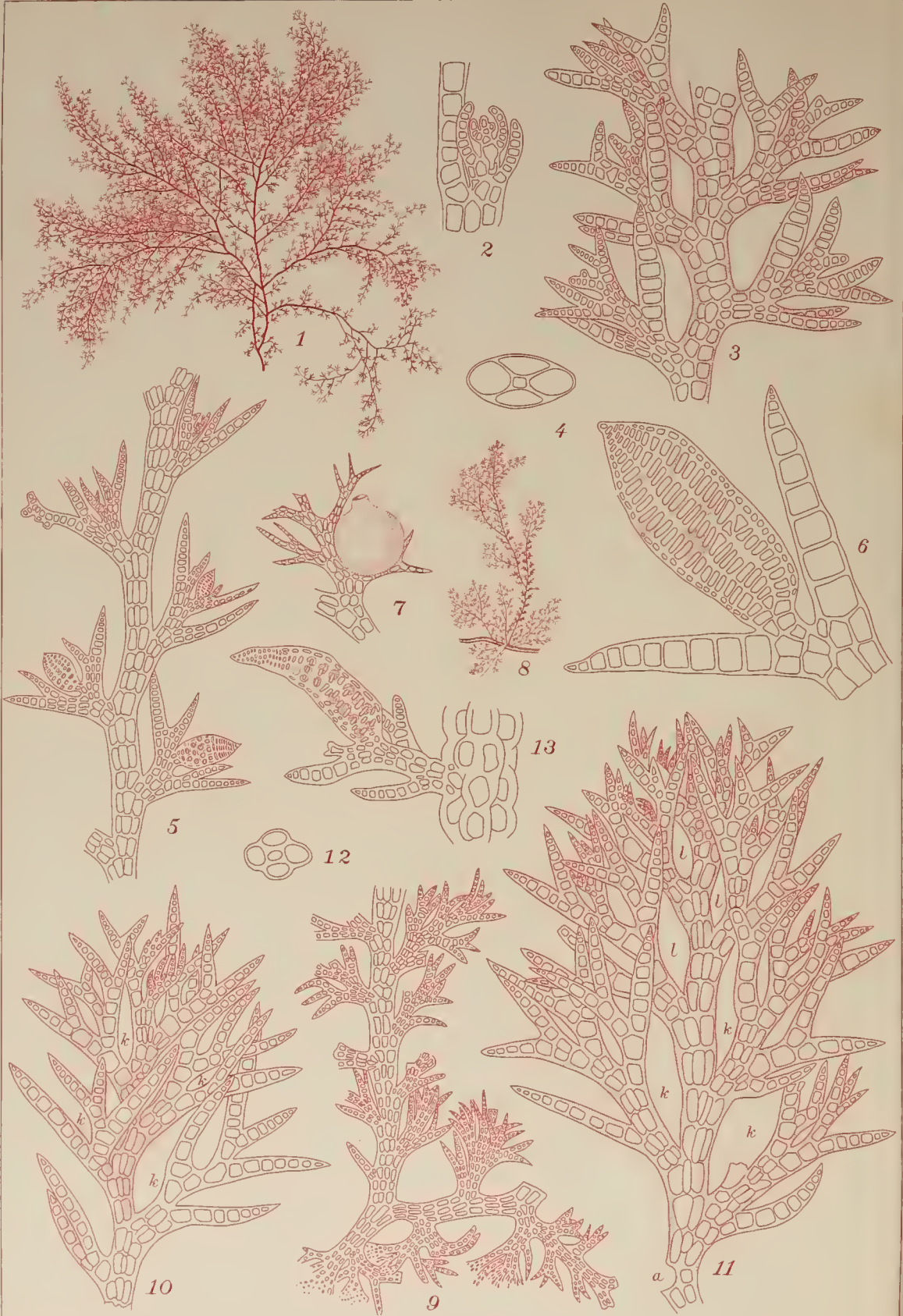
體ハ小ニシテ圓柱狀, 多少正シク叉狀ニ分岐シ, 枝ハ稍直上ス, 4-8 cm. 高ク, 漸次上方ニ細ク, 枝端間ミ又ハ二裂シ, 稍傾臥セル基部ノ所々ニテ他物ニ附着ス, 太キ部分ニテ 2-3 mm. アリ, 極メテ柔軟ナル表面ヲ呈ス; 胞囊ハ倒卵形ニシテ, 高サ 0.3-0.36 mm., 太サノ一倍半乃至 2-3 倍高ク, 頂端甚シク鈍圓ニシテ其部ノ膜薄シ. 單子囊ハ輪廓長橢圓形又ハ披針狀ニシテ胞囊ノ基部ニ近ク存ス. 色ハ鮮綠色. 質ハ軟クシテ體ハ乾燥スルトキハ紙ニ密着ス.

產地: 宮古島 (Warburg); 天草島, 潮ノ岬.

分布: 喜望峰, 紅海.

第 CLXV 圖版, 11-13 圖. 11-12: いとみる, *Codium tenue* Kuetz. ノ二個體, 1.—13: 胞囊ノ種々ノ形狀ヲ示ス; 單子囊アリ, 1³.





K.Okam. del.

5 10 1 7 12 2 9 13 8 4 11 3 6
Heterosiphonia pulchra (Okam.) Falkenb. しまだじあ Fig. 1-13.

Heterosiphonia pulchra (Okam.) Falkenb.

Nom. Jap.; *Shima-dasya*.

PL. CLXVI, Fig. 1-13.

Heterosiphonia pulchra (Okam.) Falkenb. Rhodom. p. 647.—*Dasya pulchra* Okam. Contr. to the Knowl. of the Mar. Alg. of Jap. II. (Bot. Mag. Tokyo, Vol. X, no. III) 1896, p. 34, Pl. III, fig. 14-16.—*Heterosiphonia notocensis* Okam. *l. c.* p. 34, Pl. III, fig. 17-21.

Frond epiphytic, 3-6 cm. high, filiform, 200-300 μ thick, not much attenuated above, articulated throughout, 4-siphonous, tereti-compressed, 3-4 times pinnate in a full-grown plant, thoroughly alternate and distichous, with more or less percurrent stem, branching into some main divisions. Basal portion of frond comes in contact with the substratum by means of basal pinnae which are transformed to rook-like fibres. Main branches mostly twice pinnate, very patent, weak and longer below, gradually becoming erecto-patent and shorter above and thus assuming the pyramidal outline. Branches of every order patent, slightly flexuose, elegantly furnished with short pinnae of subequal length and take linear outline, but in some, upper branches become decompound and take subcorymbose appearance. Pinnae 1-1.5 mm. long, standing at every 3rd or 4th (or 2nd) node, patent, dichotomous or dichotomopinnate, branching and bearing stichidia along the inside of pinnae; some of pinnae often grow up into branches. The number of articulations intercepted by branches and pinnae varies from 2-5, rarely more; but 2, 3 or 4 are common in proportion. Pinnulae subulate, monosiphonous for the most part, some with a few basal cells polysiphonous

rising from every second node, some times forked. Articulations half as long as or subequal to the diameter in basal portion, little longer in the median portion of branch, again becoming subequal in pinnulae, and 3 cells are seen in surface view. Stichidia lanceolate at first, linear-lanceolate or oblong and apiculate when fully grown, compressed, with an one-cell-long polysiphonous pedicel, coated with transversely arranged rectangular cells. Cystocarps urn-shaped, sessile, sitting on the thick and polysiphonous axis of pinnae. Colour pinkish red. Plant soft and flaccid and closely adheres to paper in drying.

Hab.: On several algae in the sublitoral zone. Kyushu to Hako-date; Japan Sea. Fruits: spring—summer.

Since the publication of the present plant and very closely related species, *H. notoensis*, as new to science, I have collected many specimens of both species from several localities and have found that there are many forms which are not easy to distinguish one from the other. In the typical form of *H. pulchra* upper and lower pinnae upon one and the same branch are almost equal in length, while in *H. notoensis* upper pinnae are decompounded and consequently branch assumes sub-corymbose outline. But as those characters are not definite, there being many irregularities in both species, I came to consider that *H. notoensis* is nothing but a robust form of *H. pulchra* and better to unite the both plants under one species.

PL. CLXVI. Fig. 1: frond of *Heterosiphonia pulchra* (Okam.) Fkbg., $\frac{1}{1}$.—Fig. 2: growing apex, $\frac{220}{1}$.—Fig. 3: portion of branch showing the disposition of pinnae, $\frac{63}{1}$.—Fig. 4: cross-section of branch, $\frac{80}{1}$.—Fig. 5: portion of branch showing arrangement of pinnae which bear stichidia, $\frac{42}{1}$.—Fig. 6: stichidium, $\frac{85}{1}$.—Fig. 7: cystocarp, a little magd. —Fig. 8: frond of the form hitherto taken as a different sp. *H. notoensis*,

in nat. size.—Fig. 9: basal portion of the same, $\frac{6.5}{1}$.—Fig. 10-11: branch of the same; fig. 10, “langtrieb” arising from the point marked *a* in fig. 11; *k, k*, “Kurtztriebe”; *l, l*, “Langtriebe,” $\frac{6.3}{1}$.—Fig. 12: cross-section of branch of the same, $\frac{8.5}{1}$.—Fig. 13: stichidium on a lower pinna, $\frac{5.4}{1}$.

Heterosiphonia Mont. 1842.

しまだじあ屬.

DASYEAE, RHODOMELACEAE. ふちまつも科, だじあ亞科.

體ハ概ネ直立シ, 腹背的構造ヲ有シ, 莖ハ往々扁壓シ, 細胞又ハ絲狀組織ヲ以テ成ル. 莖及主枝ハ聯基的伸長ヲ爲シ頂端ハ眞直ニ伸ビ又ハ輕ク腹面ノ方ニ屈曲シ, 兩縁ヨリ二節間(稀ニ3-8)ヲ距テ枝ヲ互生ス; 其枝ハ有限又ハ無限ノ枝トナリ, 有限成長ノ枝ハ強ク伸ビ, 無限ノモノハ再三叉狀ニ分岐セル弱キ毛狀葉ノ如キ枝トナル; 其毛狀葉枝ハ多管カ或ハ下部多管ニシテ上部單管カ又ハ全部單管ナリ. 主枝ノ多管軸ハ中軸ノ周圍ニ4, 6, 又ハ6個以上ノ周心細胞ヲ存シ, 其數ハ各部同一又ハ頂端ノ方ニ減ズ; 而シテ周心管ハ總テ同一ノ太サヲ有スルカ又ハ兩縁ノ所ニ在ル者ハ稍太クシテ他ハ細ク, 概ネ横ニ分裂セザレドモ, 時トシテハ夫ト同大ノ細胞ヲ分裂シテ爲ニ一回又ハ數回横ニ分裂ス. 主枝ハ往々周心管ヨリ生ズル根様細胞ノ爲ニ多少厚キ後生的皮層ヲ有ス. 後成的皮層ノ細胞ヨリ時トシテ一若クハ多數ノ後成的枝ヲ生ズ; 此枝ハ時ニ小サキ單管ノ毛ト成ルカ又ハ有限若クハ無限成長ヲナスベキ枝トナリテ伸長ス.——「スチキジア」ハ毛狀葉枝ノ小枝ヨリ變成シ, 殆ド常ニ放射狀ニ構成セラレ, 長キ圓柱狀ニシテ上部細ク, 多クハ多管軸ノ柄ヲ有シ, 極テ稀ニ單管ナルコトアリ, 通常其各節ニ4-6個ノ四分胞子ヲ輪生ス. 四分胞子ノ外部ハ各上

下ノ二個ニ分レタル細胞ヲ以テ蔽ハル;此二個ノ細胞ハ其部
ノ周心管ヨリ成ルナリ。精子器ハ「スチキヂア」ト同様ノ位
置ニ形成セラレ、概ネ長クシテ尖リ、多管細胞ノ柄ヲ有ス。胎
原ハ主枝ノ成長點ニ近キ毛狀葉ノ如キ枝ノ軸ノ下方ノ分岐點
ニ於テ其分岐スル部分ノ細胞ニ形成セラレ小細胞ヨリ成リ、
輕ク屈曲シ、多數ニ集リタル(時ニハ對ヲナシタル)胎原列ヲ形
成ス。囊果ハ卵形乃至壺狀ニシテ廣キ基底ヲ以テ毛狀葉ノ
如キ枝ノ多少太クナリタル軸ニ坐ス。成胞絲ハ多少穹狀ニ
集リ胞子ハ成胞絲ノ頂端ニ概ネ2個(1-3)連鎖シ、小ニシテ球
狀ヲナシ、稀レニ一個ナルコトアリテ大ニシテ棍棒狀ナリ。

約15-20種アリテ諸所ノ暖海及南氷洋ニ産ス;本邦ニハ今此
處ニ圖說スル二種アリ。一屬名ハ *Heteros* (異ナルト) *Siphon* (管)ト
ヨリ成ル。

Heterosiphonia pulchra (Okam.) Fkbg.

しまだじあ 岡村 稱。

第CLXVI圖版, 1-13圖。

體ハ他ノ海藻上ニ附着シ、3-6 cm. 高く、絲狀ニシテ、200-300 μ
太ク、上部ニ到ルモ餘リ細カラズ、全部關節シテ皮層ナク、4個
ノ周心管ヲ有シ、圓柱狀一扁壓ニシテ、充分成長セルモノニテハ
3-4回羽狀ヲナシ、兩縁ヨリ互生シ、多少貫通セル莖ヲ有シ、又ハ
數條ノ主軸ニ分ル。體ノ下部ハ體ノ基部ヨリ生ズル枝ガ
纖維狀ノ根トナリテ他物ニ固着ス。主枝ハ概ネ二回羽狀
ニ分岐シ、枝ハ廣開シ、下部ノ枝ハ弱クシテ長ク、漸々上方トナ
ルニ隨テ短クシテ直立一廣開シ、斯クテ三角錐狀ノ外廓ヲ有
ス。各部ノ枝ハ輕ク雁木狀ニ屈曲シ、短キ略同長ノ羽枝ヲ存
スル爲メ枝ノ輪廓ハ線狀ヲ呈ス、然レドモ又或ハ上部ノ枝更
ニ枝ヲ生ズル爲メ稍繖房狀ヲナスコトアリ。羽枝(有限成

長ヲナセル毛狀葉ノ如キ枝)ハ 1-1.5 mm. 長ク, 各第二, 第三又ハ第四番目ノ節ヨリ出デ, 廣開シ, 叉狀又ハ叉狀様羽狀ニ分岐シ, 其小枝ノ内側ニ枝ヲ分チ又「スチキジア」ヲ有ス; 羽枝ハ或ハ枝トナリテ伸長スルコトアリ. 枝及羽枝ノ互ニ相距ル關節ノ數ハ2ヨリ5ニシテ稀ニ5以上ノコトアリ, 然レトモ, 2, 3又ハ4ヲ比較的普通トス. 羽枝ノ小羽枝ハ先端尖リ, 大部分一列ノ細胞ヨリ成リ, 或ハ基部ノ2-3ノ細胞多管トナルコトアリ, 而シテ各第二ノ節ヨリ出デ, 時ニ分叉スルコトアリ. 關節ハ體ノ基部ニ於テハ徑ノ二分ノ一又ハ徑ト略同長ニシテ枝ノ中央部ニテハ稍長ク, 更ニ羽枝ノ小枝ニテハ徑ト同長トナル而シテ表面ヨリハ三個ノ細胞ヲ見ル. 「スチキジア」ハ始メ披針狀ニシテ後充分成長スル時ハ線狀様披針狀又ハ長橢圓形ニシテ頂端尖リ, 扁壓ニシテ一個細胞ノ長サノ多管軸ノ柄ヲ有シ, 横ニ列シタル四角形ノ細胞ヲ以テ蔽ハル. 囊果ハ壺狀ニシテ羽枝ノ軸ノ稍太ク多管トナリタル枝ニ廣キ基底ヲ以テ坐ス. 色ハ淡紅色. 體ハ軟弱, 纖麗ニシテ密ニ紙ニ附着ス.

產地: 潮線間ノ種々ノ海藻ニ附着ス. 筑紫潟(島原邊歟), 伊豆大島(白井), 江ノ島, 房洲白濱, 常陸川尻, 大津, 犬吠岬(成田), 小名濱, 松島(Wainright), 宮古, 函館, 能登羽咋, 越後能生. 四分孢子: 一春一夏; 囊果: 一八月.

予ハ曩ニ本種及ビ之ト酷似スル *H. notoensis* ヲ發表シタル以來各地ヨリ種々ノ標品ヲ蒐集シ研究シタルニ, 往々相類スル形體アリテ二者ノ區別明ナラザルコトヲ知レリ. *H. pulchra* ノ模範型ハ同一ノ枝上ニ在ル羽枝ハ上下トモ略同一ノ長サナルニ, *H. notoensis* ニテハ同シ枝ノ上部ノ羽枝ハ更ニ分岐シテ伸長スルカ爲ニ其枝ハ繖房狀ヲナスニ至ルノ差アリ. 然レドモ此等ノ性質ハ一定ノモノニアラズ, 兩種トモ種々不規則ナル型體ヲ有スルヲ以テ予ハ *H. notoensis* ヲ以テ *H. pulchra* ノ

強盛ナル發育ヲ遂ゲタル形ナリト考ヘ寧ロ兩者ヲ併シテ同一種トナスヲ至當ナリト思惟スルニ至レリ。

第CLXVI圖版. 1: *Heterosiphonia pulchra* (Okam.) Fkbg, しまだじあ, ノ體, $\frac{1}{1}$.—2: 成長點, $\frac{220}{1}$.—3: 枝ノ一部ニシテ, 羽枝配列ノ狀ヲ示ス, $\frac{63}{1}$.—4: 枝ノ横斷面, $\frac{80}{1}$.—5: 羽枝ノ配置ヲ示ス; 羽枝ニ「スチキヂア」アリ, $\frac{42}{1}$.—6: 「スチキヂア」, $\frac{85}{1}$.—7: 嚢果, 廓大.—8: 從來 *H. notoensis* トシタルモノ, 體, $\frac{1}{1}$.—9: 同上ノ基部, $\frac{65}{1}$.—10-11: 枝; 10ハ11圖ノaト印シタル所ヨリ出ル枝; h, 有限枝; l, 無限枝, $\frac{63}{1}$.—12: 同上ノ枝ノ横斷面, $\frac{85}{1}$.—13: 下部ノ羽枝ニ於ケル「スチキヂア」, $\frac{54}{1}$.

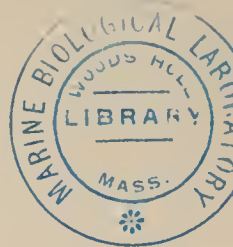
Heterosiphonia japonica Yendo.

Nom. Jap.: *Isohagi*.

Pl. CLXVII.

Heterosiphonia japonica Yendo Nov. Alg. Jap. Decas I-III, no. 23 (Bot. Mag. Tokyo, Vol. 34, n. 397, 1920, p. 8).—*H. densa* Okam. n. sp. mscr.

Frond erect, rising from a small scutate disc, with a more or less distinct main stem, or often divided into many main divisions from near base, 10-20 cm. high, 0.5-0.8 mm. thick at thicker portion, 3-4 times pinnately branched in a distichous manner. Branches of every order arise from every node in an alternate manner, more or less slightly flexuose, more so in slenderer portions. Dorso-ventral character is well shown in the arrangement of pinnae (*i.e.* branches having definite growth), which arise on the dorsal side of branch and are directed toward the apex of the segment bearing them (Fig. 2). Pinnae patent, sometimes quite simple, 1.5-3 mm. long, but more often once or twice forked or dichotomo-pinnately branched with parted lacineae, either monosiphonous





Heterosiphonia japonica Yendo. いそはぎ

throughout or polysiphonous at base for a short distance, pointed at apex, sometimes branched with finger-like ramuli at apical portion (Fig. 13); some of pinnae develop into branches afterward. Branches are more or less corticated except very young portion near apex; the cortication begins as rhizoids from pericentral cells, and afterward thickly covers the 4 or 5 pericentral cells. In surface-view of thicker branches cortical cells are linear and longitudinally arranged. Length of the articulations subequal to or one half to twice as long as the diameter.—*Stichidia* lanceolate, provided with a monosiphonous pedicel, and arise either from monosiphonous or polysiphonous base of pinnae or pinnulae, often 2 or 3 aggregated. Cystocarps globular or ovate shortly pedicelled and a little prominent at apex. Colour pinkish red. Substance soft and closely adheres to paper in drying.

Hab.: Washed ashore; Iyo, Rikuzen, Yechigo.

All the species of this genus hithertoknown have branches arising generally from every second node, never from every node, as in the present plant.

Pl. CLXVII. Fig. 1: frond of *Heterosiphonia japonica* Yendo, 1.—Fig. 2: portion of branch (having 5 pericentral cells), showing pinnae arising from the dorsal side of branch, the beginning of rhizoidal cortication, and stichidia arising from monosiphonous pinnae, $\frac{48}{1}$.—Fig. 3-5: cross-sections of different parts of branches of different plants, $\frac{48}{1}$, $\frac{34}{1}$, $\frac{15}{1}$, respectively.—Fig. 6: rhizoidal cells on the surface of main branches on the lower portion of frond, $\frac{220}{1}$.—Fig. 7: growing portion of branch showing sympodial growth of frond; *a*, apical cell, $\frac{353}{1}$.—Fig. 8: cystocarpic branch having 4 pericentral cells; *a*, *b*, forked and monosiphonous pinnae; *c*, branch of indefinite growth, forked and polysiphonous at base, $\frac{34}{1}$.—Fig. 9: polysiphonous portion of *c* in

fig. 8 magd.; 1-5: pericentral cells surrounding the central cells which are shown with thicker lines, $\frac{152}{1}$.—Fig. 10: portion of branch having 5 siphons, showing stichidia arising from both polysiphonous, *a*, *b*, and monosiphonous bases, *c*, *d*, $\frac{48}{1}$.—Fig. 11: stichidia arising from polysiphonous base (4 siphonous frond) of pinnule, $\frac{48}{1}$.—Fig. 12: surface view of a stichidium, $\frac{353}{1}$.—Fig. 13: pinnule bearing finger-like lacineae, $\frac{340}{1}$.—Fig. 14: cystocarp (4 siphonous frond), $\frac{15}{1}$.—Fig. 15: vertical section of a cystocarp, $\frac{34}{1}$.—Fig. 16: spore-filaments, $\frac{220}{1}$.

Heterosiphonia japonica Yendo.

いそはぎ. 岡村新種.

第 CLXVII 圖版.

體ハ小サキ圓盤狀根ヲ以テ直立シ, 多少明ナル莖ヲ有シ或ハ往々基部ノ附近ヨリ數條ノ主軸ニ分ルルコトアリ, 高サ 10-20 cm., 太サハ太キ所ニテ 0.5-0.8 mm. アリ, 3-4 回兩縁ヨリ羽狀ニ分岐ス. 各部位ノ枝ハ各節ヨリ互生シ, 多少輕ク雁木狀ニ屈曲シ殊ニ細キ枝ニ於テ然リトス. 腹背的性質ハ枝ノ背面ヨリ出ル羽枝(有限成長ノモノ)及其他皆一齊ニ其之ヲ有スル枝ノ頂端ノ方ニ向クコトヲ以テ能ク之ヲ見ルニ足ル(2 圖). 羽枝ハ廣開シ, 時トシテハ唯單條ニシテ, 1.5-3 mm. 長キコトアリ, 然レトモ概ネ 1-2 回分叉シ又ハ叉狀様羽狀ニ分岐シテ廣開セル小羽枝ヲ有シ, 全部單管ナルカ又ハ基部少距離ノ間多管ニシテ頂端ノ方ニ尖リ, 時トシテハ上部指狀ノ小枝ヲ有スルコトアリ(13 圖), 後或羽枝ハ伸長シテ枝トナルコトアリ. 枝ハ頂端附近ノ幼部ヲ除ク外多少皮層細胞ヲ被ムル; 皮層細胞ハ周心細胞ヨリ根様絲トシテ起リ後厚ク 4-5 條ノ周心管ヲ覆ヒ, 太キ部分ノ枝ヲ表面ヨリ見ルトキハ皮層細胞ハ線狀ニシテ

縦ニ連ナル。節間ノ長サハ其横徑ト略ボ等シク或ハ其一倍半又ハ二倍長シ。「スチキジア」ハ披針狀ヲナシ單管ノ柄ヲ有シ、羽枝若クハ小羽枝ノ單管又ハ多管ナル基部ヨリ立ち、往々2-3集合ス。囊果ハ球狀又ハ卵形ニシテ短柄ヲ有シ、頂端少シク隆起シテ開口ス。色ハ美シキ淡紅色ナリ。質ハ軟クシテ乾燥スルトキハ密ニ紙ニ附着ス。

產地：往々海濱ニ打揚ラル。伊豫新濱、志摩石鏡、三河日出、御前崎、江ノ島、房洲白濱、常陸、小名濱、松島、越後能生。果實：春一夏。

從來知ラレタル此屬中ノ植物ハ總テ少クトモ各第二ノ節ヨリ枝ヲ生ジタルモノノミニシテ決シテ各節ヨリ出セルモノナカリシガ本植物¹ハ即チ然ラズ。此點ニ於テ明ニ他ト區別スルニ足ル。

第CLXVII圖版 1: *Heterosiphonia japonica* Yendo, いそはぎ、ノ體, $\frac{1}{1}$.—2: 枝(5周心管アル)ノ一部ニシテ、其背面ヨリ羽枝ノ出ル狀、根様細胞ノ皮層ヲ形成シ始ル狀及ビ單管ノ羽枝ニ「スチキヂア」アル狀トヲ示ス, $\frac{48}{1}$.—3-5: 數個體ノ種々ノ部分ノ枝ノ横斷面ニシテ夫々 $\frac{48}{1}$, $\frac{34}{1}$, $\frac{15}{1}$, ナリ.—6: 體ノ下部ナル主枝ノ表面ニ於ケル根様細胞, $\frac{22}{1}$.—7: 聯基的伸長ヲ示セル成長點; a, 成長點, $\frac{353}{1}$.—8: 囊果アル枝(4周心管); a, b, 單管ニシテ分叉セル有限枝; c, 基部多管ニシテ分叉セル無限枝, $\frac{34}{1}$.—9: 8圖ノcナル多管部ヲ廓大ス; 1-5: 太キ線ニテ示シタル中心細胞ト之ヲ圍繞スル周心細胞, $\frac{152}{1}$.—10: 5條ノ周心細胞ヲ有スル枝ノ一部ニシテ「スチキヂア」ハ一部ハ多管ナル基部 a, b ヨリ出デ一部ハ單管ナル基部 c, d ヨリ出ルヲ示ス, $\frac{48}{1}$.—11: 小枝ノ多管ナル基部ヨリ出ル「スチキジア」(4周心管ノモノ), $\frac{48}{1}$.—12: 「スチキヂア」ノ表面, $\frac{353}{1}$.—13: 指狀ノ小枝ヲ有スル小羽枝,

1) 予ノ *H. densa* Sp. nov. トシタルモノナレドモ遠藤氏が早ク發表シタル故今之ニ從フ。

$\frac{3+1}{1}$.—14: 囊果 (4 周心細胞 アルモノ), $\frac{15}{1}$.—15: 囊果ノ縦斷面, $\frac{3+1}{1}$.
—16: 成胞絲, $\frac{2+0}{1}$.

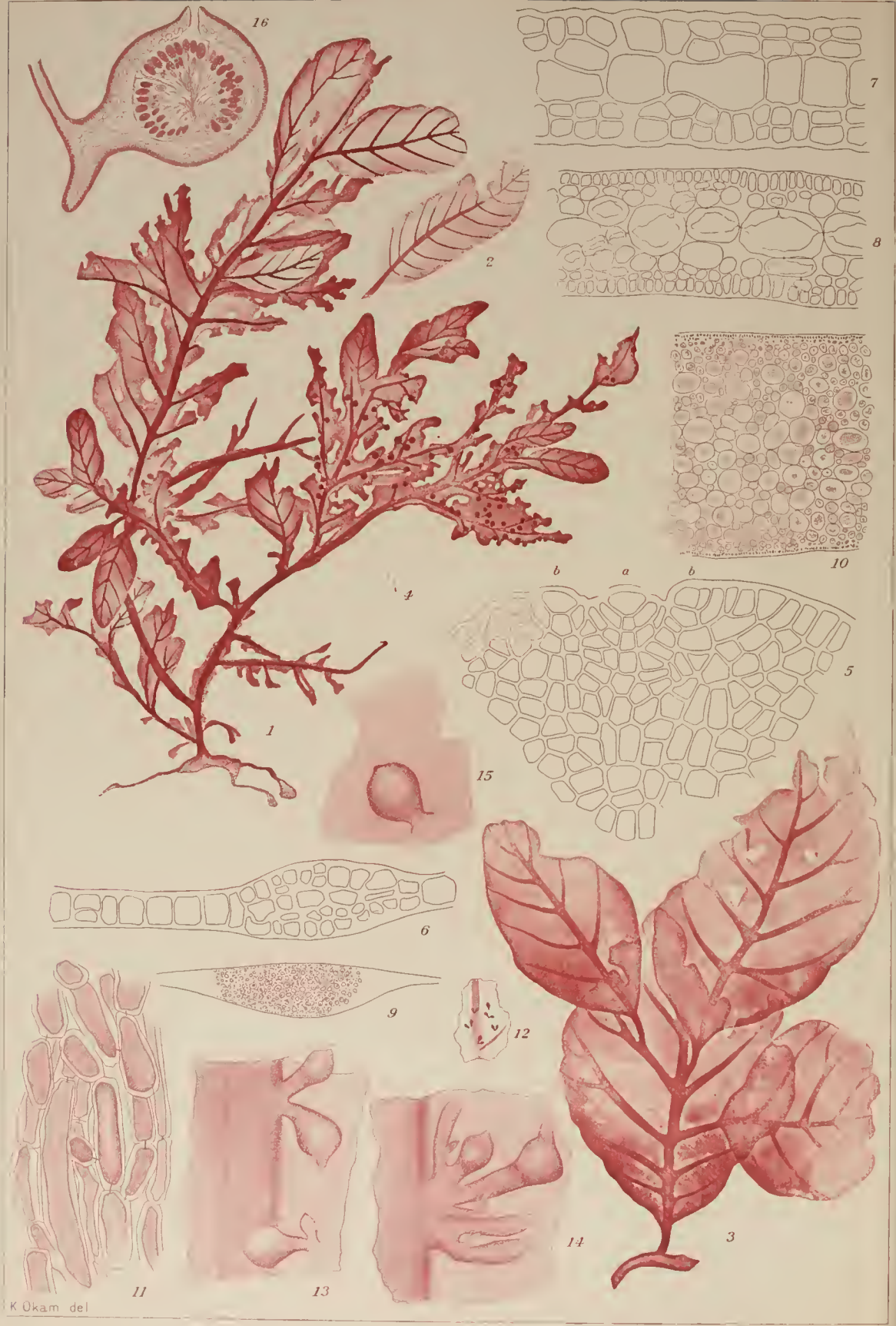
Delesseria crassifolia Rupr.

Nom. Jap.: *Konohanori*.

PL. CLXVIII.

Delesseria crassifolia Rupr. Alg. Ochot. p. 232; De Toni Syll. Alg. IV, p. 706.—Saunders Alg. of the Expedit., 1901, p. 201.—Farlow Notes on Arctic Algae, 1886, p. 473.—Setchell and Gardner Alg. of New America, p. 322.

Frond erect, rising primarily from a thin scutate disc which soon lobes into fibrous rhizines as the plant grows in age, 40 cm. high or more, with a thick subcompressed stem (some measures 0.5 cm. in diam. at base in the fresh state), and decomposed by proliferations. Proliferations are produced from the midrib and veins on both surfaces. Frond in its early state of growth is a simple oblong veins or obovato-cuneate leaf which becomes lacerated laterally along the veins and proliferates similar-shaped leaves as just spoken above. Membranous portion of the primary leaf becomes gradually wasted and thus the midrib is transformed into stem and veins into branches. In this way the plant is more and more decomposed. Leaves are very variable in size and shape, some ovate or oblong, others obovate or elliptical, still others sub lanceolate with obtuse apex. Some have the length of 15-16 cm. by breadth of 10, others 3 by 2; but 10-12 cm. by 3-5 is more usual. Midrib and veins are usually prominent and veinlets are also more or less evident, but in some they are very weakly provided. Veins are in most cases widely parted forming an angle more than 45° with the midrib,



K Okam del

Delesseria crassifolia Rupr
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some wider, others narrower. Margin entire, or slightly wavy. Surface flat or undulated. Leaves are more usually radially lacerated as if eroded. *Tetraspores* are unknown to me. *Cystocarps* almost globular, slightly prominent at apex, with short pedicels, produced on veins or veinlets as well as on intercostal portions of both surfaces. *Colour* deep purplish red. *Substance* thick membranous, rather soft-leathery, and plant in age does not adhere to paper in drying.

Hab. : Often washed ashore ; east and west coasts of Kabafuto. East coast of Hokkaido, N.E. coast of Chosen.

Pl. CLXVIII. Fig. 1: smaller fructified frond of *Delesseria crassifolia* Rupr., $\frac{1}{1}$.—Fig. 2: leaf with slenderer veins, $\frac{1}{1}$.—Fig. 3: leaves proliferating from veins on both surfaces, $\frac{1}{1}$.—Fig. 4: young leaf.—Fig. 5: surface-view of fig. 4, showing the apex of midrib, *a*, and that of veins, *b*, *b*, $\frac{390}{1}$.—Fig. 6: cross-section of a young leaf through a vein (alcoholic specimen), $\frac{220}{1}$.—Fig. 7: cross-section of a thinner lamina, $\frac{220}{1}$.—Fig. 8: cross-section of a thicker lamina, $\frac{220}{1}$.—Fig. 9: cross-section of a thicker midrib, $\frac{15}{1}$.—Fig. 10: portion of fig. 9, (alcoholic), $\frac{91}{1}$.—Fig. 11: portion of tangential section of intercostal membrane, showing cells of the middle layer and rhizoids, $\frac{175}{1}$.—Fig. 12: cystocarps, $\frac{1}{1}$.—Fig. 13-14: young cystocarps, $\frac{8}{1}$, $\frac{22}{1}$, resp.—Fig. 15: cystocarp formed on intercostal portion, $\frac{9}{1}$.—Fig. 16: vertical section of a cystocarp, $\frac{22}{1}$.

*Delesseria*¹ *crassifolia* Rupr.

このはのり 岡村 稱

第CLXVIII圖版.

體ハ直立シ、始メ小サキ薄キ吸盤狀根ヲ以テ附着シ、後體ノ成長スルト共ニ纖維根ト成ル、高サ 40 cm. 又ハ夫以上ニシテ

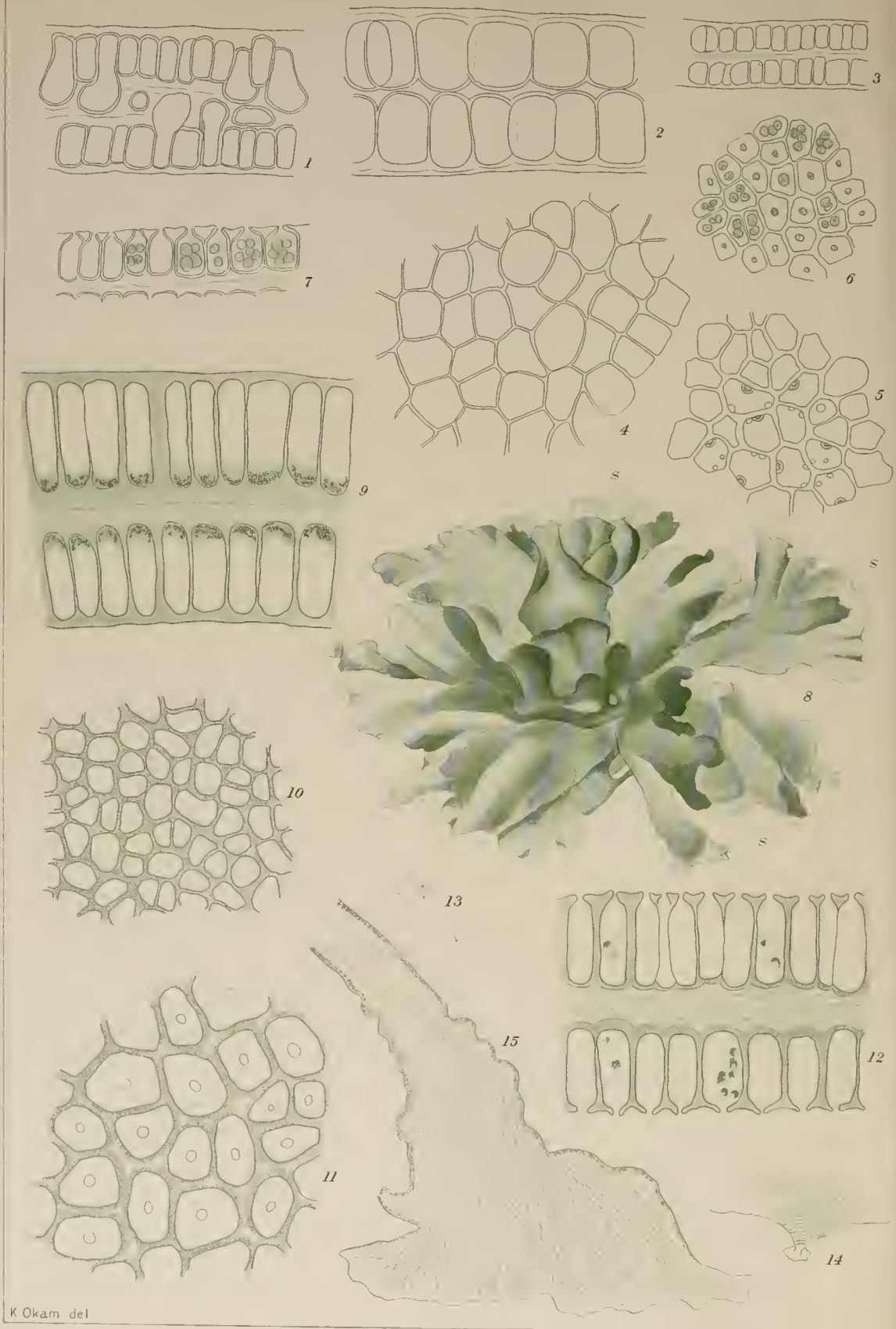
下部太キ扁圓ナル莖ヲ有シ(莖ハ生鮮ノモノニ於テ基部ノ直徑 0.5 cm. ヲ有スルモノアリ), 葉狀ノ枝ヲ副出シテ複雑トナル。枝ハ葉狀ニシテ葉ノ兩面ノ中肋及ビ脈ヨリ出ヅ。體ハ其成長ノ初期ニ於テハ單一ナル長橢圓形又ハ倒卵形—楔形ノ葉ニシテ側脈ニ沿フテ兩緣ヨリ裂ケ其中肋及側脈ヨリ同様ノ葉ヲ副出ス。此始メノ葉ノ膜ハ漸次老廢シ, スクシテ中肋ハ莖ト成リ側脈ハ枝トナル。斯ノ如クシテ體ハ益々複雑ナルニ到ル。葉ハ大サ並ニ形狀トモ極メテ變化シ易ク, 卵形又ハ長橢圓形ナルアリ或ハ倒卵形又ハ橢圓形アリ更ニ稍披針狀ニシテ頂端鈍圓ナルアリ。大サモ, 長サ 15-16 cm. 幅 10 cm. ナルアリ或ハ長サ 3 cm. 幅 2 cm. ナルモアリ, 然レドモ長サ 10-12 幅 3-5 cm. ヲ普通トス。中肋及側脈ハ通常極メテ太ク隆起シ細脈モ亦多少明ナリ, 然レドモ又或ハ甚ダ不明ナルモアリ。側脈ハ概ネ廣開シ其中肋トノ角度ハ 45° 以上ヲ常トスレドモ, 時ニ一層廣キアリ又狭キアリ。緣邊ハ全緣又ハ輕ク波狀ニ出入シ, 表面ハ平坦又ハ波縮ス; 葉ハ恰モ腐蝕シタル如ク兩緣ヨリ裂ケ込ムコト極メテ普通ナリ。四分孢子ハ未詳。囊果ハ略ボ球狀ニシテ頂端少シク突起シテ開口シ, 短柄ヲ有シ, 側脈, 細脈並ニ脈間部ニ於テ葉ノ兩面ニ生ズ。色ハ濃紫紅色。質ハ厚キ膜狀ニシテ, 寧ロ柔キ革質ノ如ク, 體ハ老成スル時ハ紙ニ附着スルコトナシ。

產地: 海濱ニ打揚ラル; ポポロチニー岬, 樺太東西海岸, 根室婦羅里, 厚岸, 霧多布, 日高浦河, 沙流太; 朝鮮羅津灣(松野)。

第 CLXVIII 圖版. 1: *Delesseria crassifolia* Rupr. このはのり, ノ結實シタル小サキ體, $\frac{1}{1}$.—2: 細キ側脈ヲ有スル葉, $\frac{1}{1}$.—3: 葉ノ兩面ノ側脈ヨリ葉ヲ副出スル狀, $\frac{1}{1}$.—4: 幼キ葉, $\frac{1}{1}$.—5: 第4圖ノ葉ノ表面ニシテ中肋ノ頂端, *a*, ト側脈ノ頂端, *b*, トヲ示ス, $\frac{390}{1}$.—6: 側脈ヲ通シテ切リタル幼キ葉ノ横斷面(アルコール標品), $\frac{220}{1}$.—7: 薄キ



5 2 6 7 2 1 3 8 4
Cladophoropsis fasciculatus (Kjellm.) Börg. みどりけ Fig. 1-7.
Ulva pertusa Kjellm. あかあそぎ Fig. 8.



K Okam del

Ulva pertusa Kjellm. あなあをさ

葉ノ横斷面, $\frac{320}{1}$.—9: 厚キ葉片ノ横斷面, $\frac{220}{1}$.—9: 太キ中肋ノ横斷面, $\frac{15}{1}$.—10: 第9圖ノ一部(アルコホール品), $\frac{21}{1}$.—11: 脉間ノ膜ノ中層ヲ表面ニ並行シテ切リタル斷面ニシテ中層ノ細胞ト根様細胞ヲ示ス, $\frac{175}{1}$.—12: 囊果, $\frac{1}{1}$.—13-14: 幼キ囊果, $\frac{8}{1}$, $\frac{21}{1}$.—15: 脉間ノ膜部ヨリ出ル囊果, $\frac{8}{1}$.—16: 囊果ノ縦斷面, $\frac{21}{1}$.

Cladophoropsis fasciculatus (Kjellm.) Borges.

Nom. Jap.: *Midorige*,

Pl. CLXIV, Fig. 1-7.

Cladophoropsis fasciculatus (Kjellm.) Börg. Contr. a la Connais. du Genre Siphonocladus Schmitz, 1905, p. 288.—*Siphonocladus fasciculatus* Kjellm. Mar. Chlorophy. fran Japan, 1897, p. 36, tab. 7, fig. 10-17.—*Cladophoropsis coriacea* Yendo, Nov. Alg. Jap. Decas I-III, no. 1 (Bot. Mag. Tokyo. Vol. XXXIV, 1920, n. 397, p. 1.)

Fronds filiform caespitose, forming pulvinato-globose or vaguely expanded mass, 2-3 cm. high, composed of densely compacted erect filaments. Filaments profusely branching in sympodial succession or arising subfasciculately, having branches and branchlets standing in alternate, opposite or often subsecund manner. They are very patent and more or less curved, and upper ramuli which are mostly longer than the lower ones often emit root fibres by which filaments are kept together; septa are here and there seen in upper ramuli, but not at the place where branches arise. Wall of filaments 10-20 μ thick (sometimes 30 μ) in thicker portion of frond, but in thinner ones, 3-14 μ . Diameter of filaments measures 125-350 μ . *Substance* rigid when fresh, in drying coarse

to touch, and the plant does not adhere to paper, but in reimmersing in the water filaments become very soft. Colour bluish-green.

Hab.: On rocks near high tide. Hyuga, Hizen, Tosa, Boshyu.

In identifying my plant for Kjellman's *Siphonocladus fasciculatus* I have not seen the authentic specimen, but from the illustrations and descriptions given by him I think I am justified in doing so. The locality, Yokohama, where he obtained his material is very near to Boshyu where our material was collected. Prof. Yendo recently described a new species, *Cl. coriacea*, which he remarks as easily distinguishable from other related species by the thickness of the wall (he measures 10-40 μ). His specimens were collected at Provs. Boshyu and Sagami, Goto Island, etc. I also collected the material from the similar localities mentioned by him, and though I have not seen his specimen, I have in my herbarium one collected by him at Boshyu in early date. On examining my material which has been formerly collected by him at Boshyu, some have thick wall measuring 33 μ , but the thickness is not uniform all over the frond, 10-20 being more common, and thicker part is limited to the lower older portion or root-like filaments; and the most part of the filaments whose basal portion has thick wall remain thin. I have measured the thickness of 4.6-14 μ in the material from southern parts as Hyuga and Tosa (equally warm places as Goto Island); in the warmer part thin-walled frond seems to be more common. Provs. Boshyu and Sagami (including Yokohama) are most provably the northernmost limit of the distribution of this plant.

Pl. CLXIX, Fig. 1-7. Fig. 1: portion of the expanded mass of *Cladophoropsis fasciculatus* (Kjellm.) Börg. from Hyuga in nat. state and size.—Fig. 2: frond (from Boshyu) isolated, $\frac{1}{2}$.—Fig. 3: frond (from Hyuga) isolated, $\frac{1}{2}$.; r, root.—Fig. 4: lower rooting filaments (from Hyuga),

$\frac{2.2}{1}$.—Fig. 5: basal filament (from Boshyu), $\frac{1.6}{1}$.—Fig. 6: portion of frond (from Hyuga), ca. $\frac{1.0}{1}$.—Fig. 7: the same, $\frac{5}{1}$; thickness of filaments measures 320-350 μ and 260 μ at base; r , root.

Cladophoropsis Börgesen 1905.

みどりげ屬.

CLADOPHORACEAE. しほぐさ科.

體ハ絲狀ニシテ主軸ナク, 多數集リテ叢生シ又ハ球狀ヲナシ, 多少分岐シ, 「ハブテラ」ヲ以テ附着ス; 「ハブテラ」ハ分岐スルコトナシ. 體ノ何レノ部分ニモ環狀ノクビレナシ. 體ハ頂端成長ヲナシ, 細胞ノ長サ均等メテ不規則ニシテ充分伸長シタル後ニアラザレバ隔膜ヲ生ズルコトナシ. 枝ハ其出ル部分ニ於テ隔膜ヲ存スルコトナラズ. 老成セル部分ハ時トシテ甚ダ不規則ナル後生的分岐ヲナス, 即チ枝トナルベキ細胞中ニ生ズル球狀ノモノ伸長シテ枝トナルナリ (Collins ハ之ヲ「枝ハ往々細胞中ニ生ズル「アプラノ」胞子ノ如キモノガ細胞膜ヲ貫通シテ伸長スルコトアリ」ト記セリ). 色素體ハ網狀ニシテ多少ノ「ピレノイド」ヲ有ス. 結實法未詳.

約 11 種ノ熱帶産アリ. 從來 Siphonocladus トシテ知ラレタルモノ多ケレドモ, Siphonocladus ハ一個ノ棍棒狀細胞トシテ起ルニ對シ本植物ハ然ラズ, 其枝ノ基部ニ隔膜ナキコトハ Siphonocladus ト類スル點ニシテ Cladophora ト異ナル所ナリ. 實ニ本屬ハ Cladophora ト Siphonocladus トノ中間ニ位スルモノト云フベシ. 一屬ノ名ハ Cladophora ト Opsis (類似) トヨリ成ル.

Cladophoropsis fasciculatus (Kjellm.) Börg.

みとりげ。岡村稱。

第CLXIX圖版, 1-7圖。

體ハ絲狀ニシテ叢生シ、團塊又ハ一面ニ擴ガリタル廣キ班ヲ作り、高サ2-3 cm. アリ、密集シ、直立セル絲ヨリ成ル。絲狀ノ體ハ不規則ニ分岐シテ或ハ聯基的ニ連續シ、或ハ一所ヨリ稍集リテ出デ、枝及小枝ハ互生シ、對生シ又ハ往々一方ノ側ヨリ偏在シテ出ヅ。枝ハ總テ甚シク廣開シ、多少彎曲シ、上部ノ枝ハ概ネ下部ノモノヨリ長ク、往々根^{Goto}發シ、之ニ依リテ相互ニ支持シテ集合ス；隔膜ハ上部ノ¹⁰⁻¹⁵。其處此處ニ在レドモ枝ノ出ル起點ノ所ニハナシ。絲ノ膜壁ハ厚キ所ニテ10-20 μ (時ニ30 μ)、薄キ所ニテ3-14 μ アリ；絲ノ直徑ハ125-350 μ ニ達ス。色ハ青味アル綠色ナリ。質ハ生鮮ノ時ハ硬ク、乾燥スル時ハ手觸リ粗ケレドモ再ビ水ニ浸ストキハ軟カクナリ、紙ニ附着セズ。

產地：潮間線ノ岩石ニ生ズ。日向、野母、土佐清水、房洲(遠藤)、館山沖ノ島(東)、横濱(Kjellm.)。

本植物ヲKjellman 氏ノ *Siphonocladus fasciculatus* ニ當ルニ就テハ予ハ其原標品ヲ見タルニ非レドモ氏ノ記載ト圖說トニテ充分誤ナシト信ズ；又氏ノ其標品ヲ採集シタル場所モ予ノ之ヲ得タル所ト大差ナシ。遠藤博士ハ此頃 *Cladophoropsis fasciculatus* ト云ヘル新種ヲ發表シ他ノ類似ノ種類ヨリモ甚シク厚キ膜壁ヲ有スルヲ以テ容易ニ區別スルニ足ルト說ケリ。氏ノ材料ハ房、相、五島ノ産ナリ。予モ亦氏ノ採集シタル場所ト略同様ノ所ヨリ標本ヲ集メタリ而シテ今氏ノ原標品ヲ見ザレドモ、十數年前氏ガ房洲ニテ採集シテ予ニ送リタルモノヲ所有スル外東氏ノ房洲館山沖ノ島ノモノヲ有ス。今氏ノ曩キニ房洲ニテ

採集シテ予ニ送リタル標本及東氏ノモノニ就テ研究スルニ或ハ 33μ ノ厚サアルモノアリ, 然レドモ此厚キ膜ハ其體ノ全部平等ニ然リト云フニ非ズシテ $10-20\mu$ ノ厚サヲ普通トシ, 體ノ下部又ハ根ノ如キ部分ニノミ稍厚クシテ其他ノ部分ハ薄シ. 而シテ日向及土佐(五島邊ト溫度ニ於テ著シキ差ナキ暖部ナリ)ノ如キ南方ノ材料ニテハ膜ノ厚サ $4.6-14\mu$ ヲ計レリ; 依テ思フニ溫暖ノ海ノモノハ膜壁薄キヲ常トスルモノナルベク, 房洲及相模ノ如キハ憶フニ本植物ノ分布上最北端ノモノナルベシ.

第CLXIX圖版, 1-7圖, 1: *Cladophoropsis fasciculatus* (Kjellm.), みどりげ, Börg.ノ聚團ノ一部, 自然大.—2: 房洲産ノ絲狀體ヲ游離シタルモノ, $\frac{1}{1}$ —3: 日向産ノモノ, $\frac{1}{1}$; *r*, 根.—4: 日向産ノ根部, $\frac{2.2}{1}$.—5: 房洲産ノ體ノ一部, $\frac{1.6}{1}$.—6: 日向産ノ體ノ一部, 約 $\frac{1.0}{1}$.—7: 同上, $\frac{5}{1}$; 絲ノ太サハ $320-350\mu$ ニシテ基部ハ 260μ アリ; *r*: 根.

Ulva pertusa Kjellm.

Nom. Jap.: *Ana-aosa* or *aosa*.

PL. CLXIX, Fig. 8; Pl. CLXX.

Ulva pertusa Kjellm. Mar. Chlorophy. fr. Japan 1897, p. 4, tab. 1, fig. 1-5, tab. 3, fig. 1-8. For synonyms vid Kjellm. *l.c.*

Frond solitary or a few tufted rising from a callous disc, 10-30 cm. high or more, almost stemless, lower portion very thick measuring 472μ just above the holdfast (Fig. 15) where the surface is concentrically wrinkled, soon becoming thinner above, measuring at least 125μ in thickness, subcoriaceous, and thin membranaceous at margin, $40-50\mu$

thick. Frond is very variable in shape being oval, elliptical, sub lanceolate or suborbicular etc., rarely undivided, usually more or less irregularly lobed and lacerated, sometimes folded or roughly wrinkled, undulated, and entire or repando-dentate at margin; surface usually perforated by larger or smaller roundish or irregularly shaped foramens which often become confluent. Cells in the lower portion of membrane vertically elongated in long prismatic form, 2-3 times high as broad in cross-section with rather thick outer wall; in marginal portion cells become shorter and subcubical, being almost equally high as broad or a little surpassing it. When fructified, the margin of frond is transformed into broadly linear rim of olive-yellow coloured sori; fertile cells are a little higher than adult vegetative cells and open by teat-like pores. *Colour* when young beautiful yellowish-green, when adult becoming bluish-green and opaque. *Substance* rather rigid when fresh, and the plant does not adhere to paper in drying.

Hab.: At first the plant grows on shells, pebbles, rocks, twigs etc. in littoral zone, afterward often becoming free and continues to grow even in that state. Very common along both coasts of this country as far as Kurile Islands. Chosen, Taiwan and Ogasawarajima. Swarmspores: late in spring.

I was not able to see the conjugation of the two-ciliated swarmspores of this plant in the vicinity of the Tokyo Bay, and the zoospores with four cilia have not yet been observed.

Pl. CLXIX, Fig. 8: fertile frond of *Ulva pertusa* Kjellm.; s, sori; nat. state and size.

Pl. CLXX: Fig. 1: cross-section of frond of *Ulva pertusa* Kjellm.; one cm. above the base, 108 μ thick; $^{220}_1$.—Fig. 2-3: cross-section of marginal portion, 50 and 46 μ thick respectively; 2: $^{690}_1$, 3:

$\frac{220}{1}$.—Fig. 4: surface view of sterile cells, shown in fig. 2, $\frac{600}{1}$.—Fig. 5: surface view of sterile cells near fertile portion, showing nuclei and pyrenoids, $\frac{340}{1}$.—Fig. 6: cells containing swarmspores, $\frac{340}{1}$.—Fig. 7: cross-section of fertile portion shown in fig. 6; height of the cell 61μ , $\frac{340}{1}$.—Fig. 8: fertile frond; s, sori; $\frac{7}{1}$.—Fig. 9: cross-section of the lower portion of frond, 124μ thick, $\frac{390}{1}$.—Fig. 10: surface view of cells shown in fig. 9; $\frac{390}{1}$.—Fig. 11: emptied fertile cells with openings. —Fig. 12: cross-section of fertile portion; height of the cell in one side 48μ , $\frac{390}{1}$.—Fig. 13: swarmspores, $\frac{550}{1}$.—Fig. 14: basal portion of frond, ca. $\frac{1}{1}$.—Fig. 15: vertical section of stem and holdfast, 472μ thick at the upper portion of the section, $\frac{22}{1}$.

Ulva pertusa Kjellm.

あなあをさ又あをさ.

第CLXIX圖版, 8圖; 第CLXX圖版.

體ハ單獨又ハ 2-3 叢生シ, 小塊狀根ヲ以テ立チ, 高サ 10-30 cm. 又ハ夫以上ニ達シ, 殆ド莖ヲ缺キ, 體ノ下部ハ甚ダ厚クシテ附着部ノ附近ハ 472μ ノ厚サアリ, 其部ノ表面ハ重圍狀ノ皺ヲ有シ, 夫ヨリ少シク上部ハ薄クナリ, 厚サ少ナクトモ 125μ 位アリ, 稍硬クシテ縁邊ハ薄キ膜狀ヲナシ, 其部ハ $40-50 \mu$ 厚シ. 體形極メテ種々ニシテ卵形, 橢圓形, 稍披針狀, 稍圓形ナル等アリ, 而シテ罕ニ破レズシテ全キアレドモ, 通常多少不規則ニ破レ, 時トシテハ褶ヲナシ又ハ粗ク皺ヲ有シ, 全縁ニシテ多少波狀ニ出入シ表面ニハ通常大小不同ノ圓形又ハ不規則ナル孔ヲ有シ此孔ハ往々彼此相連絡ス. 體ノ下部ノ細胞ハ縦ニ長ク圓柱狀ニシテ, 幅ノ 2-3 倍長ク, 其外面ニ接セル方ノ膜ハ厚シ; 縁邊部ノ細胞ハ短クシテ稍正方形ヲナシ高サハ幅ト略ボ等シク又

ハ幅ヨリモ稍高シ。實ヲ熟シタル時ハ、縁邊部ニ黄味ヲ帶ビタル茶色ノ幅廣キ線狀ノ胞子群ヲ作り、ガメート囊ハ營養細胞ヨリ少シク長ク其頂ニ乳房ノ如ク隆起シタル小孔ヲ開ク。色ハ幼キ體ニテハ美シキ黄綠色ニシテ老成スルトキハ綠黄色トナリ稍不透明ナリ。質ハ鮮時ニ於テハ稍硬クシテ乾燥スルトキハ紙ニ附着セズ。

產地：始メ小石、介殼、竹木、岩礁等ニ生ジ潮線間ニ在リ、後往々游離シ風ノ爲ニ漂流スル間モ成長ヲ持續ス。邦内普ク産シ離島朝鮮等ニモアリ。動子：一晩春。

本植物ハ内灣ノ奥ノ如キ往々有機物ノ堆積シテ腐敗セル所ニ在リテハ著シク大形トナルヲ以テ半バ死物寄生ノ如キ生活ヲ爲スモノト云フベク、養魚池ナドニ切レテ流レ入ル時ハ著シク成長ス。外海ノモノハ概ネ游離スルコトナク形亦小ナリ。所ニヨリ沿岸ニ堆積シ腐敗スル爲メ衛生上ノ問題ヲ醸シ又牡蠣床ニ堆積シテ之ヲ害シ、海苔簀ニ附着シテ海苔ヲ剝離スル等ノ害アリ。採リテ肥料トス。昔ハ之ヲ用井テ紙ニ混ジタルコトアリ。食用トシテ味美ナラズ；坂東青ノ稱アリ。

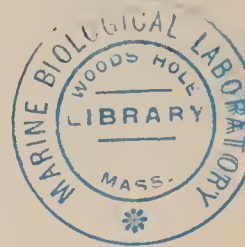
予ハ從來東京灣附近ノ海ニ於テ此植物ノ二條ノ纖毛アル動子ノ接合シタルコトアルヲ見ズ、又四條ノ纖毛アル游走子アルヲ見タルコトナシ；因テ思フニ海外ノ書ニハ動子ハ「ガメート」ナリトアレドモ本邦ノモノハ「ガメート」トナルベキモノガ單爲生殖ヲナシテ游走子ノ如ク發生スルモノナルカ；尙ホ他日ノ研究ニ俟ツ。

第 CLXIX 圖版, 8 圖: *Ulva pertusa* Kjellm., あなあをさ, ノ實アル體; s. 子囊群, 自然ノ態, $\frac{1}{1}$.

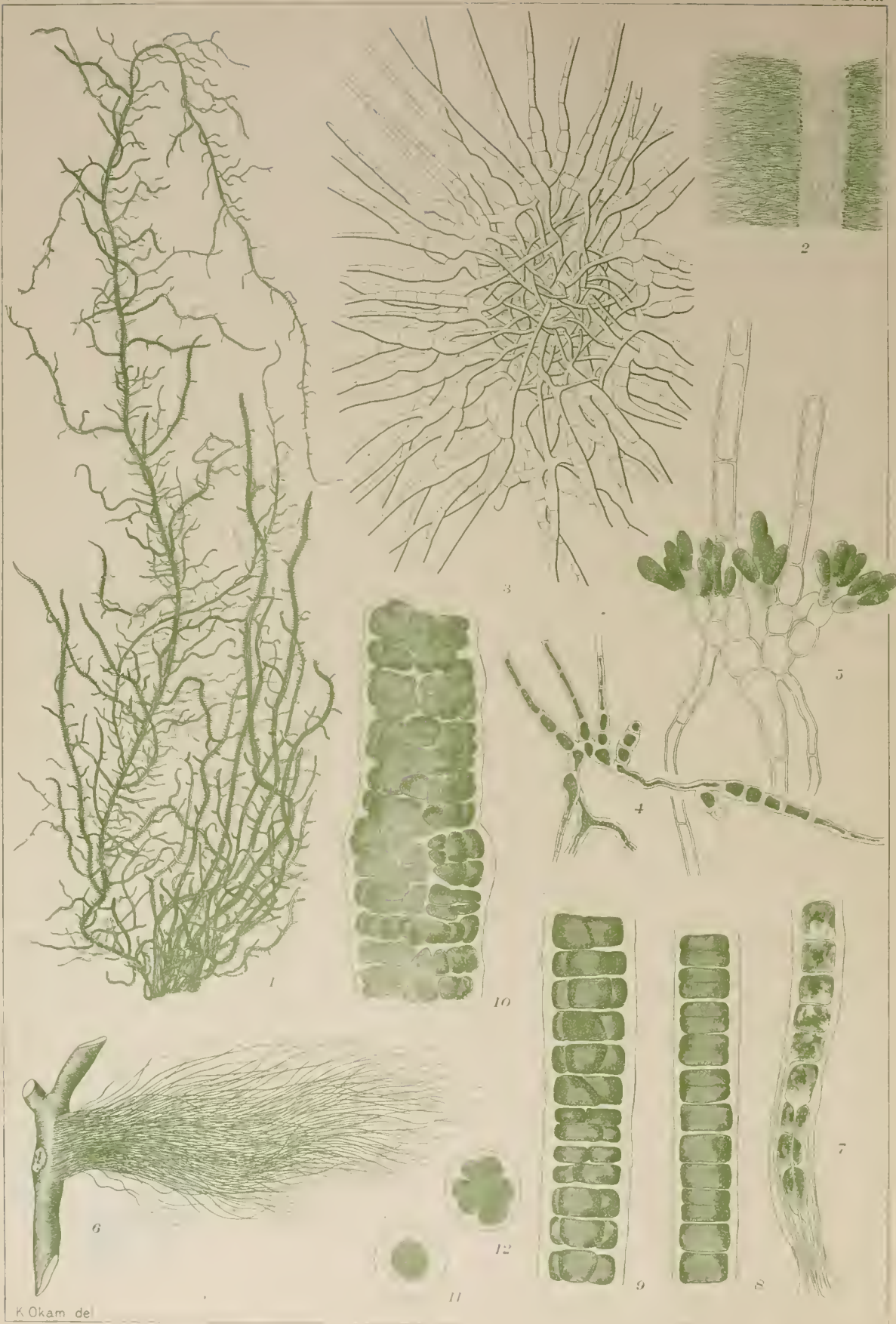
第 CLXX 圖版. 1: あなあをさノ體ノ基部ヨリ 1 cm. 上ノ部分ノ横斷面ニシテ, 厚サ 108μ アリ, $\frac{220}{1}$.—2-3: 縁邊部ノ横斷面, 夫々 50μ ト 46μ トノ厚サアリ; 2: $\frac{600}{1}$; 3: $\frac{220}{1}$.—4: 第 2 圖ニ示シ

タル營養細胞ノ表面, $\frac{600}{1}$.—5: 實ヲ熟シタル部分ニ近キ營養細胞ニシテ核ト「ピレノイド」トヲ示ス, $\frac{340}{1}$.—6: 動子ヲ藏スル細胞, $\frac{340}{1}$.—7: 第6圖ニ示セル結實部ノ横斷面ニシテ細胞ノ高サハ 61μ アリ, $\frac{340}{1}$.—8: 結實セル體; s, 子囊群; $\frac{1}{1}$.—9: 體ノ下部ノ横斷面, 124μ 厚シ, $\frac{390}{1}$.—10: 第9圖ニ示セル細胞ノ表面, $\frac{390}{1}$.—11: 結實細胞ノ空虛トナレルモノニシテ各小孔ヲ有ス, $\frac{360}{1}$.—12: 結實部ノ横斷面; 細胞ノ高サハ 48μ , $\frac{390}{1}$.—13: 動子, $\frac{550}{1}$.—14: 體ノ下部, 約 $\frac{10}{1}$.—15: 莖及附着部ノ縦斷面ニシテ其斷面ノ上部ハ 472μ 厚シ, $\frac{22}{1}$.

1, 3, 5-7: 品川産, 二月. 2, 4: 深川産, 三月. 8, 14-15, 江ノ島産. 9-13: 房洲白濱, 五六月.







K Okam del

Fig. 1-5. *Cladophora* Bory. ちすじのり Fig. 1-5.
 Fig. 6-12. *Cladophora* Bory. うしけのり Fig. 6-12.

Thorea ramosissima Bory.

Nom. Jap.: *Chisuji-nori*.

PL. CLXXI, Fig. 1-5.

Thorea ramosissima Bory ; Engl. u. Prantl, Die nat.-Pflanzenfam. p. 324, fig. 198.—Kg. Phyc. gener. p. 326, t. 16, f. I ; Id. Sp. Alg. p. 534 ; Id. Tab. Phyc. VII, t. 90, f. II.—Moeb. in Ber. d. deutsch. bot. Ges.; IX. (1891), p. 338, t. XXII, f. 7-14.—W. Schmidle, Unters. ü. Thorea ramosissima Bory (Hedwigia Band XXXV, 1896)—De Toni Syll. Alg. III, p. 587, IV, p. 33.

Fronds filiform, very soft, slimy and flaccid, abundantly branched on all sides in twice pinnate manner from the base, with longer and shorter branches mixed, 250-300 μ thick, gradually tapering upward and the plant attains 10-45 cm. or more in length. Hair measures 500-700 μ in length, and 56 μ in thickness, and the articulations 2-3 times long as broad or more ; the thickness of fusiform part of basal portion of hair measures about 11 μ . *Colour* dark violet. Plant closely adheres to paper in drying.

Hab. : Freshwater alga growing on pebbles in quickly running rivulets. Prov. Ohsumi and Ryukyu. Dec.-March.

PL. CLXXI, Fig. 1-5. fig. 1: fronds of *Thorea ramosissima* Bory, $\frac{1}{1}$.—Fig. 2: surface-view of frond showing the hairs spreading out by the pressure of cover-glass, and monospores, $\frac{13}{1}$.—Fig. 3: cross-section of a sterile branch, magd.—Fig. 4: one of cortical filaments detached, magd.—Fig. 5: cortical filament showing hairs, monospores, and rhizoids, $\frac{600}{1}$.

PL. CLXXI-CLXXV, March, 1921.

Thorea Bory 1808.

ちすじのり屬.

BANGIALES, THOREACEAE. うしけのり族, ちすじのり科.

體ハ直立, 圓柱狀, 絲狀ニシテ, 密ニ側面ヨリ分岐シ, 粘柔ニシテ多量ノ粘質ヲ存シ絲ヨリ成レル髓層ト體ノ表面ノ方ニ直角ニ走レル皮層ノ絲トヨリ成ル; 髓絲ハ漸々外方ニ太サヲ増シ, 皮層ヨリハ無數ノ不同長ナル且概ネ分岐セザル絲ヲ出シ, 此絲體ノ表面ニ於テ肉眼ニテ見ラルベキ密生セル毛ヲナス髓層ハ縱又ハ斜ニ走レル薄キ膜ノ絲ヨリ成リ, 此絲密ニ束ノ如ク集リテ一條ノ軸ヲナシ, 絲ハイロイロニ屈曲シ又分岐ス. 皮層ハ短キ紡錘狀ノ枝トナリテ髓ノ絲ヨリ起リ, 其或物ハ常ニ長キ毛ノ如ク伸長シテ體ノ外部ニ出ヅ, 而シテ此紡錘狀ノ枝ノ形成セラルル方法ハ聯基的成長法ニ依ル(4圖). 體ノ成長法ハ介生的伸長法ニ依ル; 即チ, 皮層ヲ形成セル紡錘狀ノ枝ガ盛ニ聯基的成長ニヨリテ一部ニ發達スルトキハ枝トナリテ伸ルヲ以テ體ハ之ガ爲ニ伸長セザルヲ得ズ; スクテ枝端ノ細キ部分モ漸次發達スルニ到ル. ——無性胞子ハ monospore ニシテ結實セル體ノ皮層ヲシセル紡錘狀部ノ側ニ出ル短キ枝トシテ全皮層中ニ形成セラレ, 其短キ枝ノ末端ノ細胞ガ膨レテ(空虛トレナル後モ尙ホ成長スル所ノ)子囊トナル. 雌雄ノ生殖器ハ未詳

速ニ流ルル小流中ニ在ル淡水藻ナリ. 約5-6種, 歐洲北米及印度洋中ノ大ナル島々ニ在リ; 多クハ紺紫色又ハ汚レタル堇菜色ナリ. 一屬ノ名ハ Thore 氏ノ名ニ基ヅク.

Thorea ramosissima Bory.

ちすじのり.

第CLXXI圖版, 1-5圖.

體ハ絲狀ニシテ、極メテ軟ク粘柔ナリ、基部ヨリ複羽狀ニ各方面ニ無數ニ枝ヲ出シ、枝ハ長短混在シ、太サ $250-300\mu$ アリ、漸次上方ニ細ク、體ノ長サハ $10-45\text{ cm.}$ ニ達ス。毛ハ $500-700\mu$ 長ク 56μ 太ク、關節ハ幅ノ2-3倍長ク、毛ノ基部ヲナセル紡錘狀部ノ太サハ約 11μ アリ。色ハ暗紫色ナリ、體ハ密ニ紙ニ附着ス。

產地：大隅伊佐郡菱刈村ノ谿流（川内川ノ上流）ノ小石ニ生ズ。十二月ヨリ三月ニ至ル間ヲ盛期トス（川名氏¹⁾；同荒田村；長崎縣南高來郡土黒川（大島）；琉球那覇識名園内湧水。—ちすじのりハ大隅ノ方言ナリ取テ學名トス。

第CLXXI圖版, 1-5圖。1: *Thorea ramosissima* Bory, ちすじのり、ノ體； $\frac{1}{1}$ 。—2: 蓋ガラスニテ壓サレタル爲メ毛ノ左右ニ開張セル狀ト monospores トヲ示ス, $\frac{1}{1}$ 。—3: 實ナキ枝ノ横斷面、廓大。—4: 皮層ノ絲ノ一ヲ別離シテ其聯基的伸長ヲ示ス、廓大。—5: 毛ト、monospores ト根様絲トヲ示ス, $\frac{600}{1}$ 。

Bangia fusco-purpurea (Dillw.) Lyng.¹⁾

Nom. Jap: *Ushike-nori*.

PL. CLXXI, Fig. 6-12.

Bangia fusco-purpurea (Dillw.) Lyngb. Hydrophyt. Dan. p. 83, t. XXIV, c; Berthold, Die Bangiaceen des Golfes von Neapel, 1882, f. 12-14; Kolderup-Rosenvinge Mar. Alg. of Denmark, I, p. 56.

1) Following the views of Kolderup-Rosenvinge and most of the marine algologists I put the plant under the present specific name.

*Fron*ts forming dense, expanded tufts, 3-15 cm. long, dark purplish brown to reddish-yellow or yellowish, with more or less violet or blue-greenish nuance. Filaments very soft and flaccid, with varnish-like lustre when dried, simple, straight or crooked, 20-35 μ thick in sterile portion, consisting of single row of cells, in fructified portion composed of many rows or almost parenchymatically disposed cells (often 150 μ in diam.) having different thickness according to ages. Articulations $1\frac{1}{2}$ - $\frac{3}{4}$ times long as diam., mostly half times long. In drying the plant firmly adheres to paper.

Hab.: On rocks, stones, woods etc. near high tide. Very common along the both coasts of this country.

Pl. CLXXI, Fig. 6-12. Fig. 6: fronds of *Bangia fusco-purpurea* (Dillw.) Lyngb., $\frac{1}{1}$.—Fig. 7-10: different parts of one and the same filament, $\frac{390}{1}$; 7: basal rooting portion; 8: sterile portion a little above the base; 9: fertile portion more above than in the fig. 8 with cells radially divided as shown in fig. 12; 10: uppermost portion with fully grown carpospores.—Fig. 11: cross-section of filament as shown in fig. 8, $\frac{390}{1}$.—fig. 12: cross-section of filament with cells radially divided as shown in fig. 9, $\frac{390}{1}$. (The printed colour of *Bangia* is much different from the normal, though in some individuals dark violet color is sometimes observed.)

Bangia Lyngbye 1819.

うしけのり属.

BANGIACEAE, BANGIALES. うしけり族, うしけのり科.

體ハ直立, 絲狀, 單條, 下部ハ開張セル基部細胞ニテ固着シ,

上方ニハ多少太ク、圓柱狀、時トシテハ不規則ニクビレ、又ハ上
 部中空ナリ。體ハ初メ一列ノ細胞ニシテ其介生的分裂ニ依テ
 伸ビ、體ノ下部ノ細胞ハ關節セザル細キ無色ノ絲ヲ細胞膜中ニ
 出シテ下方ニ伸ビ、此絲集リテ體ノ下部ヲシテ太キ莖ノ如クナ
 ラシム；之ニ反シテ上方ニハ細胞ハ數回體ノ表面ニ直角ナル分
 裂面ヲ以テ分裂シ、之ガ爲メ太クナリタル體ノ上部ニ於テハ元
 來ノ關節ハ後ニ彌々見分クベカラザルニ至ル。此原來ノ體ノ
 細胞ノ分裂シタルモノハ凡テ體ノ中心ニ達シ或ハ罕ニ中心部
 ノ粘化セル爲ニ中空ノ如ク成レル層中ニ存ス。——或營養細胞
 ハ直接又ハ一回(稀ニ二回)ノ分裂ニテ無性ノ monosporangium
 トナル。雌雄ノ生殖細胞ハ孰レノ營養細胞ヨリモ生ズベク
 雄ハ數回各方面ニ二個分裂シ、雌ハ直接ニ營養細胞ヨリ變成
 ス。受胎シタル卵細胞(胎心細胞)ハ各方面ニ數回二個分裂
 シテ往々8個細胞ヨリ成レル塊トナル。生殖細胞ハ同株又ハ
 異株ニ生ジ、無性胞子ハ別體ニ又ハ有性體ト同一體ニ在リ。

從來不充分ニ研究セラレタル多數ノ種類アリテ種々ノ海
 ニ産ス。B. fusco-purpurea ハ最モ普通ノ海産種ニシテ B. atropur-
 purea ハ淡水産ナリ；歐米ニ産ス。

Bangia fusco-purpurea (Dillw.) Lyngb.

うしけのり。

第CLXXI圖版, 6-12圖.

體ハ廣キ面積ヲ蔽ヘル密ナル叢ヲナシ、3-15 cm, 長ク、濃キ
 紫褐色ヨリ赭黃色又ハ淡黃色ヲ呈シ、多少莖紫色又ハ藍緑ノ
 色合ヲ存ス。絲ハ極メテ軟ク、乾燥スル時ハ漆ノ如キ光澤ヲ
 呈シ、單條ニシテ眞直又ハ屈曲シ、實ナキ部分ニテハ 20-35 μ 太
 ク、一列ノ細胞ヨリ成リ、結實セル部分ニテハ數列ノ細胞ヨリ成
 リ又ハ殆ド「バレンキマ」ノ狀ヲナセル細胞ヨリ成ル(其直徑往

往150 μ アリ),尤モ成熟ノ度ニ依テ太サヲ異ニス. 關節ノ長サハ其直徑ト同ク又ハ其 $\frac{1}{2}$ ニシテ多クハ $\frac{1}{2}$ ナリ. 乾燥スルトキハ紙ニ密着ス.

產地: 高潮線ノ所ニ在ル岩石,小石,樹枝等ニ生ズ. 本邦兩沿岸トモ普通ナリ. 臺灣亦之ヲ産ス. 冬—初春.

分布: 世界各地ニ殆ド普シ.

備考: 本種ハ Porphyra (あまのり屬)ト極メテ親近ノモノナルガ故ニ其味亦之ニ類シ食用トナスニ足ル,出雲ニテかもじのりノ名アルモノ多クハ此ヲ含ム;臺灣ニテハ頭毫菜ト稱シ食用トナス. うしけのりハ宮城縣ノ方言(ペコ(牛)のり)ニシテ牛ノ毛ノ色ニ類スルヨリ云ヘリ取テ和名トス. 學名ハ Kolanderup-Rosenvinge 氏及多數學者ノ說ニ從ヒ海産ノモノヲ呼ブニ此學名ヲ以テシ淡水ノモノヲ B. atropurpurea トナスニ依ル.

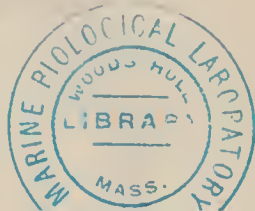
第CLXXI圖版,6-12圖, 6: Bangia fusco-purpurea ノ海苔ヒバニ附着シタル狀, $\frac{390}{1}$.—7-10:同一體ノ各部ヲ示ス, $\frac{390}{1}$;7:根ヲ出セル體ノ下部;8:基部ノ少シク上ナル實ナキ部分(細胞ハ盛ニ介生分裂ヲナス);9:8圖ヨリモ少シク上部ノ實ヲ有スルニ至レル部分ニシテ細胞ハ第12圖ニ示ス如ク放射狀ニ分裂ス;10:最モ上部ニ在ル充分成熟セル果胞子ヲ有スル部.—11:8圖ニ示セル實ナキ部分ノ横斷面, $\frac{390}{1}$.—12:9圖ニ示セル如ク細胞放射狀ニ分裂セル部分ノ横斷面, $\frac{390}{1}$.

Erythrophyllum Gmelini (Grun.) Yendo.

Nom.-Jap.: Yezo-tosaka.

PL. CLXXII.

Erythrophyllum Gmelini (Grun.) Yendo, Bot. Mag. Tokyo, Vol. XXIX, n. 345, 1915, p. 230, fig. 1-3.—*Callymenia Gmelini* Grunow:





K Okam. del

Erythrophyllum Gmelini (Grun.) Yendo
えぞとしか

Setch. and Gardn. Alg. of N. W. Amer. p. 307.—*Fucus palmetta*, Gmelin, Hist. Fucorum, Taf. XXIII.

Fronds membranaceous, irregularly parted into di-polychotomous or subpalmately lobed blades, which again may become lacerated into irregularly shaped minor segments ending in blunt apices, with entire or minutely spinulated and undulato-sinuated margins. The basal part of a blade often becomes more or less thickened as if provided with evanescent midrib, but no sort of rib or vein is to be found, and, by gradually wasting away of the membrane in the lower portion of frond the plant often appears to have more or less elongated ancipito-compressed stem which often measures 3-10 cm. in length. Thus the frond is sometimes irregularly lobed simple leaf, sometimes provided with branches, each of which terminates with an irregularly clefted or longitudinally splitted blades having fan-shaped, cordate or reniform outline, and they are spread in one plane with some lobes overlapping to each other. Frond consists of 3 layers; epidermal, cortical and medullary. The epidermal layer consists of a single layer of vertically arranged small cells; cortical of a few layers of almost globular cells. The medullary layer which forms the main portion of the thickness of frond consists of large and elongated elliptical cells, accompanied by subglobular ones, which are longitudinally arranged in rather loose aggregation without any definite order, as if composed of anastomosing hyphal cells. A peculiarity in the structure of the present plant is the presence of a yellowish homogeneous hyaline substance in some of the medullary cells; those containing it are more elongated than the others, in most cases having rod-like or fusiform shape of irregular outline, and have no definite position. Colour of the peculiar contents is mostly yellowish, but sometimes milky or colourless. *Fruits* unknown. *Colour* purplish-

red. *Substance* membranaceous and the plant adheres to paper in drying.

Hab.: Often washed ashore; common along the east coast of Hokkaido, Kurile.

Pl. CLXXII. Fig. 1-2: two different fronds of *Erythrophyllum Gmelini* (Grun.) Yendo, $\frac{1}{1}$.—Fig. 3: outline of cross-section of the lower thickened portion of frond, $\frac{3}{1}$.—Fig. 4: almost half of a cross section of blade cut through the upper portion of midrib-like thickening, to show that the cells are filamentous and dense, $\frac{17.5}{1}$.—Fig. 5: cross-section of the upper portion of blade, $\frac{17.5}{1}$.—Fig. 6: content of so-called peculiar cell, partly granular, partly homogenous and hyaline, $\frac{17.5}{1}$.—Fig. 7: longitudinal section of a younger and thinner blade showing that cells are shorter or oblong than in the older portion, $\frac{17.5}{1}$.—Fig. 8: portion of longitudinal section of blade showing the connection of the peculiar cell (illustrated in deeper colour) with cortical cells, $\frac{17.5}{1}$.

Erythrophyllum J. Agardh 1872.

スズとさか属.

DUMONTIACEAE. りうもんさう科.

體ハ葉狀、扁平、可ナリ薄ク、下部莖狀ヲナシ、上部ハ不規則ニ縁邊ヨリ種々ニ缺裂ス；葉ノ柄ハ中肋ノ如クナリテ不規則ニ互生ニ側面ニ分岐ス。體ハ絲ト細胞トヨリ成ル；髓ハ可ナリ厚ク、絲組織ニシテ、各方面ニ錯綜セル多數ノ太キ根様細胞ヲ存ジ、此細胞ノ爲ニ原來ノ髓絲ハ互ニ壓セラル；而シテ原來ノ髓絲ハ長クシテ横ニ連絡點ヲ存ス、(所々中軸ノ様ニ著シク目立ツ)；皮層ハ内方ニ緩ク、横ニ連絡點アル大ナル細胞ヨリ成リ、短キ根様細胞ト混在シ、外方ニハ密ニシテ表面ニ縦ニ列セル小サキ細胞ヲ存ス。一四分胞子、雌雄細胞トモ不明。

北米ノ西岸ニ *E. delesserioides* J. Ag. ト云ヘル一種アルヲ知ルノミ。此屬ハ種々ノ點ニ於テ甚シク *Dumontiaceae* (*Dilsea* 及其近親ノ屬ヲ含ム) ト類縁ノ存スルヲ思ハシム; 依テ今生殖細胞不明ナレドモ此科ニ置ク。一屬ノ名ハ *erythros* (紅) ト *phyllon* (葉) トヨリ成ル。

***Erythrophyllum Gmelini* (Grun.) Yendo.**

島嶼とさか. 岡村稱.

第CLXXII圖版.

體ハ膜狀ニシテ, 不規則ニ叉狀—多叉狀又ハ稍掌狀ニ分裂セル葉片ヲ存シ, 葉片ハ更ニ不規則ノ形狀ヲ有スル小片ニ分ルルコトアリテ各片ハ皆鈍圓ニ終リ, 縁邊ハ全縁又ハ小鋸齒狀ヲナシ或ハ波狀ニ出入ス。葉片ノ下部ハ多少厚クナリテ恰モ上部ニ消失セル中肋ヲ存スルガ如ク見ユ; 然レドモ中肋又ハ側脉ノ如キモ, ノハ之ヲ認ムベカラズシテ, 體ノ下部ノ膜狀部漸々萎朽スルガ爲ニ體ハ往々兩縁ニ扁壓セラレタル多少長キ莖ヲ有スルガ如キ觀ヲ呈シ, 莖ノ長サハ往々 3-10 cm. ニ達ス。斯クテ體ハ時トシテハ不規則ニ分裂セル單一ノ葉ナルコトアリ, 又時トシテハ枝ヲ分チ各枝ハ不規則ニ分裂セル若クハ縱裂セル葉片トナリ, 葉片ハ扇狀, 心臟形又ハ腎臟形ノ輪廓ヲ有シ, 各片皆同一ノ面ニ擴ガリ, 裂片ハ互ニ相重疊スルコトアリ。體ハ三層ヨリ成ル; 上皮, 皮部及髓層是ナリ。上皮層ハ縱ニ列セル小サキ細胞ノ一層ヨリ成リ; 皮部ハ殆ド球狀ノ數層ノ細胞ヨリ成ル。髓層ハ體ノ厚サノ大部分ヲナス所ニシテ, 大ナル長橢圓形ノ細胞ト稍球狀ノ細胞トヨリ成リ, 細胞ハ一定ノ順序ナク縱ニ稍錯綜シテ恰モ錯綜セル菌絲細胞ノ如シ。本植物ノ構造上一特色ト認ムベキハ髓層ノ細胞中ノ或物ニ於テ黃色ナル透明ノ物質ヲ存スルコトニシテ, 其之ヲ含

メル細胞ハ他ノ細胞ヨリモ長ク、概ネ棒狀又ハ紡錘狀ヲナシテ不規則ノ外形ヲ有シ、決シテ一定ノ位置ニ在ルコトナシ。此特殊ナル内容ノ色ハ概ネ黃色ナレドモ又時トシテハ牛乳色乃至無色ナルコトアリ。—果實ハ知ラレズ。色ハ鮮紫紅色。質ハ膜質ニシテ體ハ乾燥スルトキハ紙ニ附着ス。

產地：海濱ニ打揚ゲラル。千島(遠藤)、根室、霧多布、厚岸。

第CLXXII圖版。1-2: *Erythrophyllum Gmelini* (Grun.) Yendo, 糸ぞとさか、ノ二個體, 3.—3: 體ノ下部ノ莖ノ如ク太クナリタル部分ノ横斷面, 4.—4: 中肋ノ如ク厚クナリタル部分ノ上部ヲ斷リタル葉ノ斷面ノ殆ド半分ニシテ細胞ノ絲狀ニシテ密ナルコトヲ示ス, 17.5.—5: 葉ノ上部ノ横斷面, 17.5.—6: 所謂特殊ナル細胞ノ内容、一部ハ粒狀一部ハ均質ニシテ透明ナリ, 17.5.—7: 幼キ薄キ葉ノ縦斷面ニシテ細胞ハ老成部ニ於ケルヨリモ短ク又ハ長橢圓形ナルコトヲ示ス, 17.5.—8: 葉ノ縦斷面ノ一部ニシテ所謂特殊ノ細胞(濃キ色ノモノ)ト皮部細胞トノ連絡ヲ示ス, 17.5.

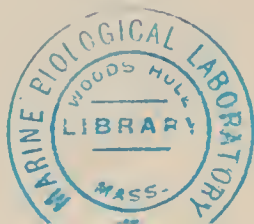
Scinaia Cottonii Setch.

Nom. Jap.: *Hira-fusanori*.

PL. CLXXIII, Fig. 1-7.

Scinaia Cottonii Setchell, The *Scinaia* Assemblage, 1914, p. 103, Pl. II, fig. 24.—*Scinaia complanata* Cotton, in Kew Bulletin, no. 7, p. 260, 1907 (as to Japanese plant only).

Plant solitary or a few tufted, rising from a small scutate disc, purplish-red, 9-12 cm. high or more, 5-7 times dichotomous, abruptly tapering





Scinaia Cottonii Setch. ひらふきのり Fig. 1-7.
Tylotus lichenoides Okam. なみいはたけ Fig. 8-15.

below to a short cylindrical stem, with a little or widely patent, more or less acute axils. Branches slightly attenuated below, compressed, not evenly flat but transversely wrinkled in short distances making slightly wavy elevations like ridges, which are sometimes somewhat reticulated; not constricted anywhere, and thickened on both margins, 3-10 mm, broad; axial filaments not visible; apex bifid. Epidermis consists of a layer of large, colourless cells which are rectangular-oblong, 27-30 by 40-46 μ with tops slightly arched; hypodermal layer consists of rather loosely packed coloured globular cells. *Cystocarps* scattered, with some tendency toward intramarginal aggregation, depresso-globular, immersed in the frond, slightly prominent with an opening above; nucleus surrounded by the tissue of parenchymatic cells which are in connection with inner filaments of frond; spore-filaments densely packed whose terminal articulations mature to spores. *Colour* beautiful purplish-red. *Substance* succulent, membranaceous when dried and firmly adheres to paper in drying.

Hab.: In deeper waters. Sagami, Boshyu, Enoura (Saida).

The transverse wrinkles are very peculiar to the present plant which most probably should have escaped keen eyes of Cotton and Setchell as they become often hardly visible in preparing for herbarium-specimens. *Sc. latifrons* Howe (Phyc. Stud. V, Some Mar. Alg. of Low. Calif. Mexico, 1911, p. 500, Text-fig. 1, pl. 28) I think, most probably should be the same as the present plant; for, transverse wrinkles are visible in his illustrations (*l.c.* p. 501 text-fig. 1 and better, Pl. 28). They should not be mere wrinkles resulting from the process of drying, but elevated ridges in fresh state as the surface of frond in our herbarium-specimens shows the similar appearance as it is seen in his illustrations. Cotton (Kew Bull., no. 7, p. 260, 1907) identifies the present plant with his *Sc. complanata*¹⁾ which he raised to the specific rank from a form of *Sc. furcellata*

1) This specimen I have seen through the kindness of Mr. Narita.

Biv., but I can not agree with him; for, in the note in Phyc. Bor. Amer. no. 836, he states that "the frond is flattened throughout, even when quite fresh" and does not mention the presence of transverse wrinkles in its fresh state. I was very strongly inclined to name the present plant as *Sc. latifrons* Howe and put *Sc. Cottonii* Setch. as its synonym, but as I have not seen any reliable specimen of *Sc. latifrons* I refrained, for the present, from doing so.

Pl. CLXXIII, Fig. 1-7. Fig. 1: cystocarpic frond of *Scinaia Cottonii* Setch. from fresh material, $\frac{7}{1}$.—Fig. 2: cortical portion of frond, $\frac{390}{1}$.—Fig. 3: longitudinal section of branch showing ridge-like wrinkles; two cystocarps are seen in the section; the ends marked with \times are to be continued to each other; a, a , indicate the same sides of frond, $\frac{5}{1}$.—Fig. 4: cross-section of a branch showing the thickness, $\frac{5}{1}$.—Fig. 5: vertical section of a cystocarp, $\frac{91}{1}$.—Fig. 6: tissue surrounding the nucleus, magd.—Fig. 7: spore-filaments, $\frac{220}{1}$.—(All the figures except 5 and 7 were prepared from fresh materials; 5 and 7 from dried ones).

Scinaia Cottonii Setch.

ひらふさのり 岡村 稱.

第CLXXIII圖版, 1-7圖.

體ハ單獨又ハ數莖小サキ盤狀根ヨリ立チ, 紫紅色ニシテ 9-12 cm. 若クハ夫以上高ク, 5-7回叉狀ニ分岐シ, 下部ハ急ニ細クナリテ短キ圓柱狀ノ莖ヲナシ, 腋ハ多少銳角ニシテ僅ニ若クハ稍廣ク開キテ分岐ス. 枝ハ各其下部ノ方ニ少シク細ク, 扁平ナレドモ平等ニ平坦ナラズシテ小距離ニ横ニ皺ヲナシ, 其ハ少シクウネリタル波狀ノ隆起線ヲナシテ時ニ或ハ稍網

ノ如ク連絡スルコトアリ;枝ハ何レノ部分ニモクビレルコトナク、兩縁ニ厚ク、幅3-10 mmアリ;體ノ内部ニ軸ノ如キモノアルヲ見ズ;枝端ニ裂ス。上皮層ハ一層ノ大ナル無色ノ細胞ヨリ成リ、其形長方形—長橢圓形ニシテ、長サ40-46 μ 幅20-30 μ アリ、頂端少シク穹形ヲナス;皮下層ハ寧ロ緩ク集合セル紅色球狀ノ細胞ヨリ成ル。囊果ハ散在シテ存スレドモ幾分縁邊ノ附近ニ集合セントスル傾向ヲ示シ、稍扁キ球狀ニシテ體中ニ埋在シ上部ニ果孔アリテ其部ハ少シク隆起ス;仁ハパレンキマ細胞様ノ組織ヲ以テ圍繞セラレ其組織ハ體ノ内部ノ絲ト連絡ス;成胞絲ハ密ニ束狀ニ集リ、其頂端ノ關節ヨリ胞子ヲ成熟ス。色ハ美キ紫紅色ニシテ質ハ液汁多ク乾燥スルトキハ膜質トナリ紙ニ附着ス。

產地: 深キ海底ニ在リ;館山灣ニテ10尋位;相模、房州館山、駿河江ノ浦(齋田);大分(江熊)。

本植物體ノ表面ニ在ル横皺ハ本種ノ極メテ著シキ特徴トスル所ニシテ多分Cotton及ビSetchell二氏モ之ヲ見落シタルモノナルベシ;蓋シ此類ノ構造ハ之ヲ乾燥シテ措葉スル間ニ往々見分ケ難キニ至レバナリ。Sc. latifrons Howe (Phyc. Stud. V, Some Mar. Alg. of Low. Calif., 1911, p. 500, text-fig. 1, and pl. 28)ハ十中九迄本植物ト同一ナラザルベカラズト思惟ス;何トナレバ氏ノ圖(同上p. 501, 挿圖1及28圖版)ニ横皺ヲ窺フベケレバナリ。其横皺ノ如ク見ユルモノハ措葉トスル爲ニ生ジタル單純ノ皺ニテハナカルベク、其生鮮ノモノニ於テハ隆起セル線條ナリシナルベシ;其ハ自分ノ有スル措葉標本ニ於テモ其表面ニ之ト同様ノ容子ヲ見レバナリ。Cotton氏ハ元トSc. furcellata Biv. f. complanataトセラレタルモノヲSc. complanata Cottonト云ヘル種トナシ本植物ヲ此種ナリト斷定セリ(Kew Bull., n. 7, p. 260, 1907);然レドモ予ハ氏ノ說ニ賛同スル能ハズ;何トナレバ其Phyc. Bor.

Amer. no. 836 ヲ以テ頒布シタル標本ニ附スル附言ニ云フ所ニ依レバ“體ハ全部扁平ニシテ、全ク生鮮ノ時ニモ亦然リ”トアリテ其生鮮ノモノニ於テ横皺ノ存在スルコトヲ示サザレバナリ。此標本ハ成田氏ノ好意ニヨリ借覽シテ研究シタルニ全ク本植物トハ同ジカラズ。予ハ *Sc. latifrons* Howe ト *Sc. Cottonii* Set. トハ必ズ同一ノモノナリト固ク信ジテ疑ハザルモノニシテ、既ニ本植物ヲ呼ブニ *Sc. latifrons* Howe トセンカトシタル程ナレドモ、如何ニセン其信據スベキ標本ヲ見ザルヲ以テ暫ク之ヲ遠慮シタレドモ他日必ズ予ノ說ノ正鵠ナルコトヲ證スルノ日アラント期スルモノナリ。

第 CLXXIII 圖版, 1-7 圖. 1: *Scinaia Cottonii* Set., ひらふさのり, ノ囊果アル體, 生鮮ノモノヨリ取ル, $\frac{1}{1}$.—2: 體ノ皮部, $\frac{390}{1}$.—3: 枝ノ縱斷面ニシテ皺ノ隆起セルコトヲ示ス; 斷面ニ二個ノ囊果ヲ見ル; × 印ノ處ハ瓦ニ接スベキ處ヲ示ス; *a, a*, ハ體ノ同一ノ表面ヲ示ス, $\frac{5}{1}$.—4: 枝ノ厚サヲ示ス横斷面, $\frac{5}{1}$.—5: 囊果ノ縱斷面, $\frac{21}{1}$.—6: 仁ヲ圍繞スル組織, 廓大.—7: 成胞絲, $\frac{220}{1}$, (5 圖ト 7 圖トハ乾燥標本ヨリ取リタルモノニシテ他ハ皆生鮮ノ材料ヨリ取レリ).

Tylopus lichenoides Okam. Sp. nov.

Nom. Jap.: *Nami-iwatake*.

PL. CLXXIII, Fig. 8-15.

Fronde repent, attached to the substratum by emitting papillose or short (3-4 mm. long), cylindrical rhizoidal processes from the under-surface, subcoriaceous-membranaceous, irregularly lobed with di-polychotomous, often slightly imbricated lobes which end in roundish apices with undulato-sinuose margins. *Cystocarps* prominent, sessile, mostly along margins of lobes,

globular, depresso-umbilicate, pertused above. *Tetraspores* very small, forming oval or irregularly roundish, flat, wart-like nemathecium which are scattered over the upper surface of frond. *Colour* dark red, becoming almost black in drying. *Substance* coriaceous-membranaceous, tenaceous, becoming hard in drying and the frond does not adhere to paper.

Of *Tylotus*, only one species, *T. obtusatus* J. Ag., is hitherto-known, of which Prof. Yendo remarks that there are two forms in Harvey's type specimens (Notes on Alg. new to Jap. III, Bot. Mag. Tokyo, Vol. XXIX, no. 343, p. 110, 1915). "One is subdichotomously laciniated with the breadth of segments nearly equal for the whole length," as is well known in Phyc. Austr. Pl. 210. "Other is irregularly laciniated at the base, palmately lobed above with the segments broad and imbricated with the neighbouring ones. On the under-surface of the basal segments there are many papillose rhizoidal processes.—"Yendo *l.c.* With this, our specimens seem to resemble in some measures, as Prof. Yendo remarks, but he does not mention whether it is entirely erect or partly decumbent or wholly repent. I do not know whether our plant is same with this second form of Harvey or not, but the present plant seems decidedly to differ from the first form on which *T. obtusatus* is established, by having wholly repenting habit and rhizoidal processes. Based on these grounds I take the present plant as a new species.

Pl. CLXXIII, fig. 8-15: Fig. 8: two different forms of cystocarpic fronds of *Tylotus lichenoides* Okam.; one is seen with rhizoidal processes, $\frac{1}{4}$.—Fig. 9: portion of a nemathecium, $\frac{550}{1}$.—Fig. 10: one of slit-like spaces of the cystocarp with spores attached to the wall of the cavity, $\frac{220}{1}$.—Fig. 11: portion of frond bearing nemathecium, $\frac{8}{1}$.—Fig. 12: cortical and subcortical layers of sterile portion of frond, $\frac{220}{1}$.—Fig. 13: vertical section of a cystocarp, $\frac{91}{1}$.—Fig. 14: portion of a papilla-form elevation

connected with the inner wall of pericarp with spore-filaments, $\frac{300}{1}$,—Fig. 15: spore-filaments, highly magd.

Tylopus J. Ag. 1876.

なみいはたけ屬.

GRACILARIEAE, SPAEROCOCCACEAE.

たまみ科, おごのり亞科.

體ハ扁平, 叉狀又ハ不規則ニ分裂シ, 細胞組織ヲ以テ成ル; 即チ體ノ中央部ニテハ細胞ハ稍大キク, 外方ニハ漸次稍小ナリ; 皮層ハ小細胞ニテ成リ, 體ノ表面ニ直角ニ列スレドモ幾分不明ナリ. 四分孢子ハ扁キ疣狀ノ「ネマセシア」群ヲナシ群ハ散在ス, 孢子ハ環狀ニ分裂ス. 囊果ハ體ノ表面ニ散在シテ隆起ス; 果皮ハ可ナリ厚ク, 多クノ場所ニ於テ仁ト結合ス; 仁ハ其下ノ方ハ廣キ表面ヲ以テ甚ダ厚キ胎産ヲ作り上ノ方ニ穹狀ニ隆起シ, 多數ノ障壁ノ如キ突起ヲ以テ果皮ト結合シ, 之ガ爲ニ不規則ナル狹キ裂目ノ如キ空隙ヲ其間ニ殘ス; 而シテ成胞絲ハ其間隙ノ壁ヨリ多數ノ短キ往々分枝セル關節セル絲トナリテ出デ其頂端ニ一個(數個連ナレル?) 卵形ノ孢子ヲ形成ス.

從來只一種 Australia ノ海ニ産スル *T. obtusatus* J. Ag. アルヲ知ルノミ.——屬ノ名ハ *tylos* (權ノ先キ) ヨリ成ル.

Tylopus lichenoides Okam. 新種.

なみいはたけ 岡村稱.

第 C LXXXIII 圖版, 8-15 圖.

體ハ平臥シ, 乳嘴狀乃至短キ (3-4 mm.) 圓柱狀ノ突起ヲ體ノ裏面ヨリ出シテ岩石ニ附着シ, 稍硬キ膜質ニシテ不規則ニ二又—多叉狀ニ分裂シ, 裂片ハ往々輕ク重疊シ頂端圓クシテ縁邊ハ波狀ニ出入ス. 囊果ハ隆起シ, 無柄ニシテ, 多クハ裂片ノ

縁部ニ沿フテ存在シ、輕ク上ヨリ壓扁シタル如クニシテ臍狀ヲナシ、上部ニ果孔ヲ開ク。四分孢子ハ卵形又ハ不規則ニ圓キ扁キ癭狀ノ「ネマセシア」ヲナシテ集リ體ノ上面ニ散在ス、極メテ小ナリ。色ハ暗紅色ニシテ乾燥スルトキハ殆ド黒色トナル。質ハ硬キ膜質ニシテ、強靱、乾燥スル時ハ堅クナリ紙ニ附着セズ。

Hab.: 海岸ニ打揚ゲラル。奄美大島名瀬、平戸、五島宇久島、野母、天草二江、日向、潮岬、相模江ノ島、但馬竹野村。

本屬ノ植物ハ從來只一種、*T. obtusatus* (Sond.) J. Ag. ヲ知ルノミ。此植物ニ就テ遠藤氏ハ Harvey ノ模範標品ニ二型アルコトヲ論ゼリ (植物學雜誌第 XXIX 卷, 343 號 110 頁); 即チ: “一ハ全部殆ド同一ノ幅ノ裂片ヲ有スル稍叉狀ニ分裂セル體形ノモノ” ト “今一ハ基部ニ於テ不規則ニ裂ケ、上部ハ掌狀ニ分裂シ各部ハ幅廣クシテ隣接セル部分ヲ以テ相重疊シ體ノ基部ノ裏面ヨリ多數ノ乳嘴狀ノ根ノ如キ突起ヲ出スモノ” トナリ。此第二ノ形狀ノモノト本植物トハ遠藤氏モ云ヘル如ク相類似スルモノノ如シ。然レドモ、氏ハ夫ガ全ク直立シテ生活スルカ又ハ一部傾臥シテ斜上シ若クハ全部平臥スルカニ言及セズ。又予ハ Harvey ノ第二ノ形狀ノモノト本植物ト同一アルヤ否ヤヲ知ラザレドモ其第一形狀ノモノ即チ *T. obtusatus* ノ依テ命名セラレタルモノハ直立スルモノニシテ本植物ノ如ク平臥シ且根ノ如キ突起ヲ有スルモノトハ明ニ異ナルモノナリト思考ス。此點ニ於テ予ハ本植物ヲ新種トス。

第 CLXXIII 圖版, 8-15 圖。8: *Tylotus lichenoides* Okam., なみいはたけ、ノ囊果ヲ有スル二個體ニシテ一ハ根ノ如キ突起ヲ出スヲ見ルベシ, $\frac{1}{1}$.—9: 「ネマセシウム」ノ一部, $\frac{550}{1}$.—10: 囊果ノ隙間ノ如キ室ノ一部ニシテ其壁ニ孢子ヲ附スル狀, $\frac{220}{1}$.—11: 「ネマセシア」ヲ有スル體ノ一部, $\frac{8}{1}$.—12: 實ナキ部分ノ皮層ト皮

下層, $\frac{290}{1}$ —13: 囊果ノ縦斷面, $\frac{91}{1}$ —14: 囊果ノ果底ヨリ乳嘴狀ニ隆起セル壁ノ一部ニシテ果皮ノ内面ト結合シ, 其壁ヨリ成胞絲ヲ出ス狀, $\frac{390}{1}$ —15: 成胞絲, 廓大。

Rhabdonia robusta J. Ag.

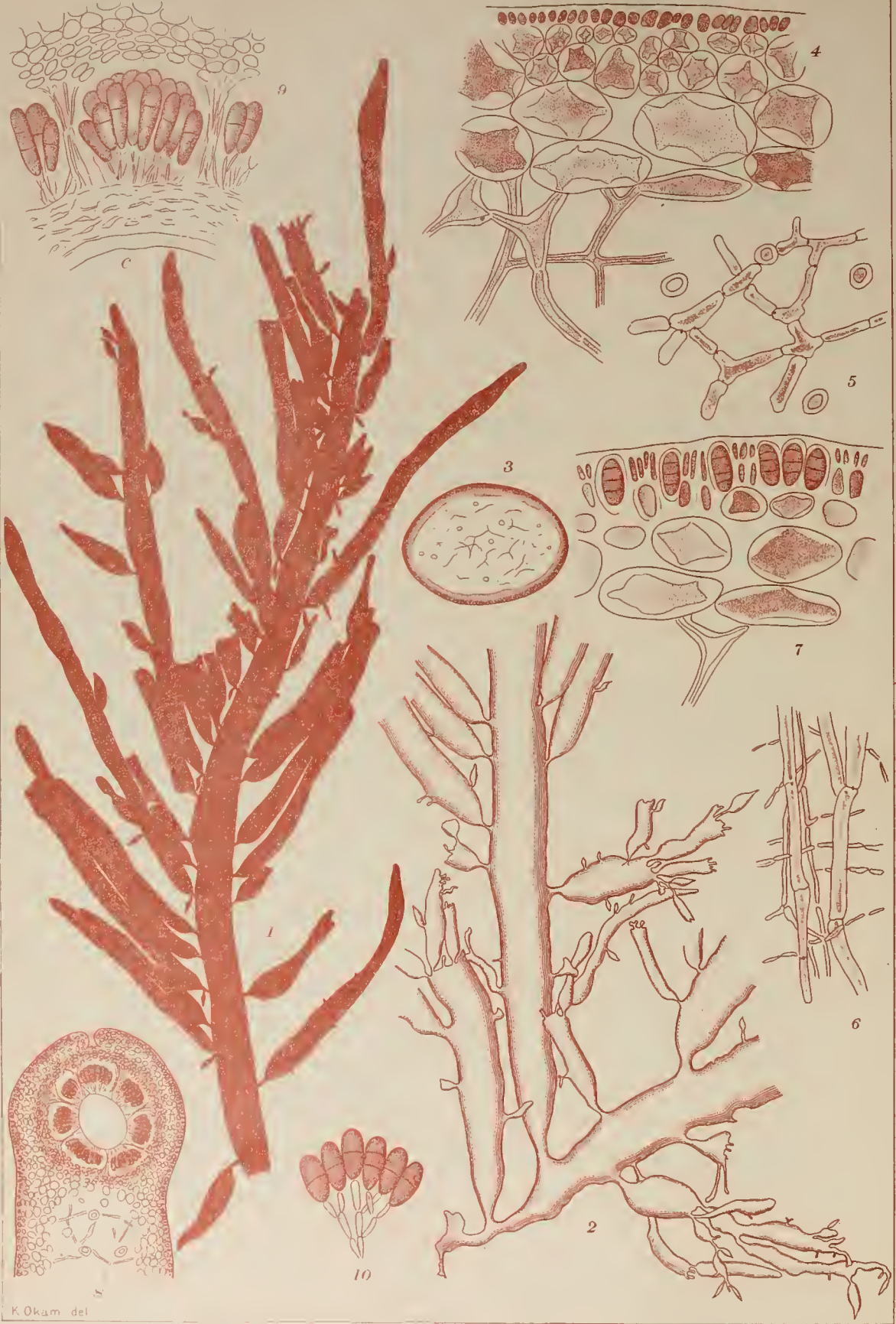
Nom. Jap.: *Mirin*.

PL. CLXXIV.

Rabdonia robusta J. Ag. Sp. Alg. II. p. 355; Yendo, Notes on Alg. new to Jap. II, p. 273 (Bot. Mag. Tokyo, Vol. XXVIII, 1914, no. 333).—*Solieria australis* Harv. Phyc. Austr. pl. 149.

Fronds solitary or a few tufted rising from a small scutate disc, attenuating below into a short cylindrical stem, soon dilating above to broadly linear tereti-compressed main branches, 25-35 cm. long, 3-15 mm broad, 2-3 times thickly branched in an alternate manner. Branches cylindrical when young, inflato-tubulose, very much succulent and gelatinous in the fresh state, soon compressed above, ending in blunt or pointed apices, and vaguly narrowed here and there, with the bases of branchlets abruptly very much constricted, so that all the segments droop down as the plant is brought up above the water. *Cystocarps* immersed or little prominent, dispersed in the lesser sorts of branches. *Colour* reddish or yellowish purple, according to the age of plant. *Substance* gelatinoso-membranaceous, very succulent, and firmly adheres to paper in drying.

Hab.: In deeper waters; the Sagami Bay, Goto-Islands, Prov. Kishyu and Bosyu.



Rhabdonia robusta J. Ag.
みりん

I have not been able to determine the plant in question only by consulting the literature mentioned above; for, it seems to me much to differ in several points with the present species. But I followed Prof. Yendo who identified this plant to the present species after careful studies of several related specimens kept in the herbaria of different countries.

PL. CLXXIV. Fig. 1: upper portion of cystocarpic frond of *Rhabdonia robusta*, J. Ag., $\frac{1}{1}$.—Fig. 2: lower portion of frond, $\frac{1}{1}$.—Fig. 3: cross-section of a smaller branch, $\frac{12}{1}$.—Fig. 4: portion of cross-section of branch showing the cortical structure, $\frac{220}{1}$.—Fig. 5: portion of inner filaments in the cross-section of branch, $\frac{220}{1}$.—Fig. 6: inner filaments in a longitudinal section of branch, $\frac{21}{1}$.—Fig. 7: tetrasporangia, $\frac{220}{1}$.—Fig. 8: vertical section of cystocarp, magd.—Fig. 9: smaller clusters of spore-filaments; c, central cell, $\frac{220}{1}$.—Fig. 10: spore-filaments, magd.

Rhabdonia Harv. みりん屬.

RHODOPHYLLIDACEAE とさかのり科.

體ハ圓柱狀,各方面ニ分岐シ,多少中空ニシテ内部ノ組織ハ弛緩シ,時トシテハ下部莖ノ如クナリテ實質ナリ,多少太キ一條ノ中軸アリテ,多少密ニ根様絲ヲ以テ圍繞セラル;頂細胞ハ交互ニ斜ニ關接シテ中軸ヨリ皮層ヲ形成スル絲ヲ互生ス;皮層ノ内側ハ圓キ細胞ヨリ成レル薄キ層ニシテ多少根様絲ヲ伴フ而シテ内方ニ大ニシテ外方ニ小ナリ。胎原列ハ甚多數ニシテ3個ノ細胞ヨリ成リ多クハ内方ニ向ヒ各々皮層ノ絲ノ内側ノ一細胞ニ存ス。助細胞ハ少數ニシテ多クハ受胎スル前ニハ特ニ夫ラシク見エズ,幾分胎原列ニ近ク存シ,多少長キ「オーブラステマ」絲ヲ以テ熟ス。熟シタル助細胞ハ多クハ附

近ノ數個ノ細胞ト癒合シタル後體ノ内部ノ方ニ「ゴニモプラスト」ヲ出ス;其癒合シタル細胞ヨリーノ太キ突起ヲ出シ其突起ノ膨レタル頂端ヨリ各方面ニ多數ノ束狀ニ集レル枝ヲ放射狀ニ發出ス;而シテ此束狀ニ集レル枝ハ即チ成胞絲トナルモノニシテ實トナラザル中性ノ絲組織ノ一部ヲ一方ノ側ニ壓迫シ一部ヲ其束狀ノ枝ノ間ニ挟ンデ壓迫スル如クシテ成ル。囊果ハ體ノ上部ニ散在シ體內ニ埋マリテ存シ一方ノ側又ハ各方面ニ僅ニ膨起ス。仁ハ甚シク弛緩シタル内皮部ノ内側ニ於テ皮層ノ少シク厚クナリタル部分ニ附着シ其周圍ニ之ヲ圍繞スル絲組織又ハ根樣絲ノ組織ナク一ノ大ナル球狀ノ中心細胞アリテ其表面ヨリ多クハ分岐セル多數ノ成胞絲ヲ各方面ニ放射狀ニ出ス;其束集セル成胞絲ノ頂端ノ1-2個ノ細胞胞子トナル。胞子ハ往々囊果内ニテ發芽ス。果皮ハ其部ノ體壁ノ厚クナリタルモノヨリ成リ明ナル果孔アリ。四分胞子ハ環狀ニ分裂シ體ノ表面ニ散在ス。

10-15種アリテ多クハ不充分ニ研究セラレタリ、専ラオーストラリアノ海ニ産ス。

Rhabdonia robusta J. Ag. みりん.

第CLXXIV圖版.

體ハ單獨又ハ數個叢生シテ小サキ盤狀根ヨリ立ち、下部細クナリテ短キ圓柱狀ノ莖トナリ、急ニ幅廣キ線狀ノ圓柱狀一扁壓セル主枝トナリ、25-35 cm. 長ク、幅3-15 mm. アリ、2-3回密ニ互生ニ分枝ス。枝ハ幼キ時ハ圓柱狀ニシテ中空ノ如ク膨レ、生鮮ノ時ハ甚シク多肉ニシテ粘汁多ク、直チニ上方ニ扁壓トナリ、處々急ニ細クナリ枝及小枝ノ基部ハ急ニ細ククビレタリ;故ニ各部ノ枝ハ體ヲ水中ヨリ取出シタルトキハ皆懸垂ス。囊



K. Okam. del.

²
Caulerpa scalpeliformis (R.Br) Ag. var. ³*denticulata* (Decsn.) Weber. ¹
くろきづた

果ハ體內ニ埋在シ或ハ僅ニ隆起シ、小枝ニ散在ス。色ハ體ノ年齡ニヨリ紫紅色又ハ黃紫色ナリ。質ハ粘質ニシテ膜狀、極メテ多肉ニシテ密ニ紙ニ附着ス。

產地：稍深所ニ在リ往々打揚ラル；相模灣，房洲，紀洲尾鷲，五島有川（安藤）。

分布：ニウフオルランド。

予ハ唯參考書ノミニ依テ本植物ヲ此種ナリト斷定スル能ハザリキ；蓋シ許多ノ點ニ於テ本種ト異ナルガ如ク見ユレバナリ。然レドモ遠藤氏ハ廣ク各國ノ博物館措葉室ニ藏セラレタル標本ヲ充分研究シタル後本植物ヲ本種ナリト斷定シタルヲ以テ予ハ今氏ノ所定ニ從フモノナリ。本植物ハ粘質ニ富メルヲ以テ房洲館山邊ニテハ布糊ノ代用トス；みりんハ同地ノ方言ニシテみるノ轉訛ナリ採テ以テ和名トス。

第CLXXIV圖版。1: *Rhabdonia robusta* J. Ag., みりんノ囊果アル體ノ上部, $\frac{1}{1}$ —2: 體ノ下部, $\frac{1}{1}$ —3: 小サキ枝ノ横斷面, $\frac{1^2}{1}$ —4: 枝ノ横斷面ノ一部ニシテ皮層ヲ示ス, $\frac{2^2 0}{1}$ —5: 枝ノ横斷面ニシテ内部ノ絲ノ一部ヲ示ス, $\frac{2^2 0}{1}$ —6: 枝ヲ縦斷シテ内部ノ絲ヲ示ス, $\frac{0^1}{1}$ —7: 四分孢子囊, $\frac{2^2 0}{1}$ —8: 囊果ノ縦斷面, 廓大—9: 成胞絲ノ小サキ束; c, ハ中心細胞, $\frac{2^2 0}{1}$ —10: 成胞絲, 廓大。

Caulerpa scalpelliformis (R. Brown) Ag.

var. *denticulata* (Decsn.) Weber.

Nom. Jap.: *Kuroki-dzuta*.

PL. CLXXV.

Weber, Mongr. des *Caulerpa* p. 47; Svedelius, Ecol. and System. Stud. of the Ceylon Species of *Caulerpa*, p. 109, 1906; Reinke, Über *Caulerpa* 1899, p. 13, f. 14-15.

Fronde broadly lanceolato-linear, simple, with alternate or opposite lobes, some of which are very slightly curved upward, mostly straight, little attenuated toward apical portions where minute teeth are clearly seen. Branches are proliferated from the both surfaces. Leaves attain 10-15 cm. in height.

Hab.: The present plant is, so far as is known in this country, to grow in the shallow waters in Prov. Oki, an island in the Japan Sea.

PL. CLXXV¹⁾. Fig. 1: frond of *Caulerpa scalpelliformis* (R. Br.) Ag. var. *denticulata* (Decsn.) Weber, $\frac{1}{1}$.—Fig. 2: marginal teeth, $\frac{22}{1}$.—Fig. 3: one of the teeth, $\frac{56}{1}$.

Caulerpa scalpelliformis (R. Brown.) Ag.

var. *denticulata* (Decsn.) Weber. くろきづた 岡村稱.

第CLXXV圖版.

體ハ幅廣キ披針狀樣線狀ニシテ單條,羽狀裂片ヲ有シ,裂片ハ互生又ハ對生シ,其或者ハ極メテ僅ニ上方ニ屈曲スレド

1) f. *scalpelliformis* on Pl. CLXXV read *scalpelliformis*.

モ概ネ眞直ニシテ其先端ノ方ニ少シク細ク且微細ナル鋸齒ヲ見ルベシ。枝ハ體ノ兩面ヨリ副出ス。體ノ高サ10-15 cm. アリ。色ハ鮮綠色ナリ。

產地：予ガ明治四十三年九月二十九日隱岐國島前黒木御所址ノ下ノ淺海ニテ採集シタル外ニ他ノ產地ヲ知ラズ。之ニ因テくろきづたと命名シタリ。

分布：紅海。

第CLXXV圖版。1: *Caulerpa scalpelliformis* (R. Br.) Ag. var. *denticulata* (Decsn.) Weber, $\frac{1}{1}$.—2: 縁邊ノ鋸齒, $\frac{2.2}{1}$.—2: 鋸齒ノーツ, $\frac{5.6}{1}$.



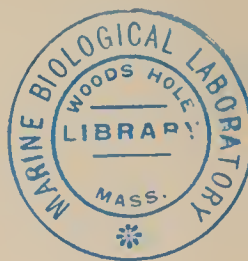


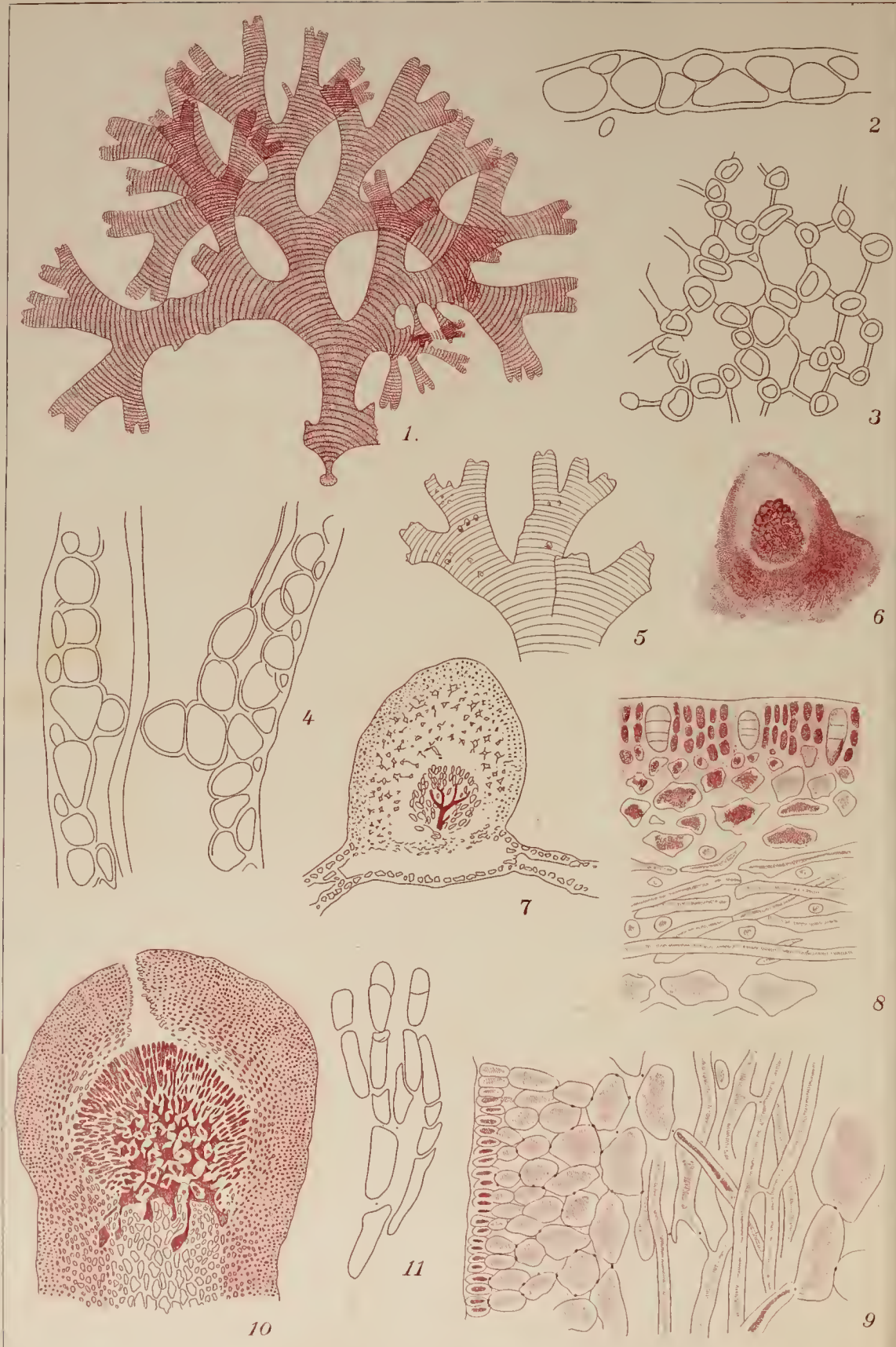
Halymenia dilatata Zanard ふいりぐさ.



K. Okam. del.

3 2 1
Sarcodia Montagneana J. Ag. あつぱのり. Fig. 1-2.
Halymenia dilatata Zanard. ふいりぐさ Fig. 3-4.





10 4 1 11 7 5 9 8 2 3 6
Champia expansa Yendo. うすばわつかぎさう Fig. 1-7.
Sarcodia Montagneana J. Ag. あつばのり Fig. 8-11.

Halymenia dilatata Zanard.

Nom. Jap.: *Fu-iri-gusa*.

PL. CLXXVI; PL. CLXXVII, Fig. 3-4.

Halymenia dilatata Zanard. Plant. Mar. Rubr. enum. p. 280, t. V, f. 1.—
J. Ag. Anal. Alg. 1892, p. 53.—*Sebdenia dilatata* (Zanard.) De Toni Syll.
Alg. IV, p. 531 (partim).

Fronds rising from a small scutate disc, with or without a short thickish stem, abruptly expanding with reniform base into a broad membrane which is mostly suborbicular or transversely expanded or sometimes broadly oblong, undulato-curved, simple or more or less lobed, attaining as much as 15-20 cm. in breadth and height. Margin entire, crenate or roughly subdentato-sinuose or fimbriated with ligulate lobules and more or less crisped, rarely proliferous from surfaces with small papillose or ligulate processes. Surface not evenly flat but roughly undulato-bullated. —*Tetraspores* scattered all over the surfaces of frond. *Cystocarps* minute dots, densely scattered all over the surface of frond. *Colour* purplish red, often variegated with irregularly shaped small patches. *Substance* gelatinoso-membranaceous and the plant firmly adheres to paper in drying except stem.

Hab.: In deep places at 3-9 fath. Ryukyu, Kyushu, Kishyu.

Structure of frond and cystocarp is that of *Halymenia*. Auxiliary cell which is rather large, oval or oblong, is formed as a branch of cortical filament and is situated at the point where some 5 or more cortical filaments converge (Pl. CLXXVII, fig. 3, a). Those filaments afterward



become the network surrounding the nucleus of cystocarp. De Toni puts this plant in *Sebdenia*; but I can not agree with him.

PL. CLXXVI. Fig. 1: Sterile frond of *Halymenia dilatata* Zanard..
 $\frac{1}{1}$.—Fig. 2: cross-section of frond, slightly magd.—Fig. 3: cortical layer of frond, $\frac{3.5.3}{1}$.—Fig. 4: tetrasporangia, $\frac{3.5.3}{1}$.

PL. CLXXVII, Fig. 3-4. Fig. 3: auxiliary cell *a* (alcoholic material), $\frac{3.5.3}{1}$.—Fig. 4: cystocarp (alcoholic material), $\frac{4.8}{1}$.

Sarcodia Montagneana (H. et H.) J. Ag.

Nom. Jap.: *Atsuba-nori*..

PL. CLXXVII, Fig. 1-2; PL. CLXXVIII, Fig. 8-11.

Sarcodia Montagneana (H. et H.) J. Ag. Sp. Alg. II, p. 623; Id. Epicr. p. 431; De Toni Syll. Alg. IV, p. 414; Yendo Notes on Alg. new to Jap. (Bot. Mag. Tokyo, Vol. XXXI, n. 363, 1917) p. 82.—*S. Ceylanica* Harv.; Kg. Tab. Phyc. XIX, t. 33, f. 1; J. Ag. Epicr. p. 431; De Toni Syll. Alg. IV, p. 415.

Plants solitary or a few tufted, rising from a scutate disc with cuneate base which often tapers into short, thickish stem, or almost stemless, expanding upward into 3-4 times dichotomous or irregularly lobed fronds, which are very variable in shape and size, some flabellate, others irregularly forked, attaining 10-20 cm. in height. Segments widely parted with round axils, some broadly linear, others widely cuneate, varying from 5-10 mm. to 4-5 cm. in breadth, with blunt, truncated, ligulate or bifid apices. Margin entire, smooth or provided in age with wart-like thicken-

ings or papillose processes, often furnished with simple ligulate or once or twice forked cuneate proliferations and in older plant frond becomes very much thickened.—*Tetraspores* scattered over the surfaces of frond. *Cystocarps* globoso-hemispherical, mostly situated along or within the margin, sometimes densely scattered all over the both surfaces. *Colour* brownish-red or yellowish. *Substance* thick membranaceous becoming almost leathery in age and the plant imperfectly adheres to paper in drying.

Hab.: Probably in deeper waters; Kii, Hachijo and Miyake Isls., Sagami, Rikuchyu.

Pl. CLXXVII, Fig. 1-2. Fig. 1: sterile frond of *Sarcodia Montagneana* (H. et H.) J. Ag., $\frac{1}{1}$.—Fig. 2: another frond bearing cystocarps, $\frac{1}{1}$.

Pl. CLXXVIII, Fig. 8-11. Fig. 8: portion of the cross-section of tetrasporic frond, $\frac{220}{1}$.—Fig. 9: portion of the longitudinal section of frond, $\frac{152}{1}$.—Fig. 10: vertical section of cystocarp, $\frac{48}{1}$.—Fig. 11 spore-filament, $\frac{353}{1}$.

Champia expansa Yendo.

Nom. Jap.: *Usuba-watsunagiso*.

Pl. CLXXVIII, Fig. 1-7.

Champia expansa Yendo Three New Mar. Alg. from Jap. (Bot. Mag. Tokyo, Vol. XVII, 1903) p. 103, pl. III, f. 10-13.

Frond compresso-complanated, regularly dichotomous, expanding in a flabellate manner, with reniform outline, abruptly tapering below into

cuneate base, 6-10 cm. high. Segments broadly linear or cuneate, erectopatient or patent with round axils, 6-10 mm. broad concentrically zonate in short distances, bifid at apices, and proliferating from margins of adult segments.—*Cystocarps* ovoid sessile on the surface of frond. *Colour* purplish-red. *Substance* membranaceous and the plant firmly adheres to paper in drying.

Hab.: On rocks about 8 fathoms deep below the tide marks at Misaki (K. Imamura); Choshi, Wagu.

Pl. CLXXVIII, Fig. 1-7. Fig. 1: frond of *Champia expansa* Yendo, $\frac{1}{1}$.—Fig. 2: cross-section of frond, $\frac{220}{1}$.—Fig. 3: surface view of frond, $\frac{220}{1}$.—Fig. 4: longitudinal section of frond through a dissepiment, $\frac{220}{1}$.—Fig. 5: portion of frond bearing cystocarps, $\frac{1}{1}$.—Fig. 6: cystocarp, $\frac{22}{1}$.—Fig. 7: vertical section of cystocarp, $\frac{48}{1}$.

Ceramium tenerrimum (Mart.) Okam.

Nom. Jap.: *Kc-igisu*.

Pl. CLXXIX, Fig. 1-7.

Hormoceras tenerrimum Mart. Tange Preuss. Exped. nach Ost-Asien p. 146, t. VIII, f. 2.—*Hormoceras flaccidum* (non Harv.) Sur. Alg. Jap. Mus. bot. Lugd.-Bat. 1870, p. 28, Tab. XIII.—*Ceramium gracillimum* Griff. et Harv.; De Toni Syll. Alg. IV, p. 1483, (partim); Okam. Nippon Soruimeii (2nd. edit.) p. 98; Okam. Alg. Jap. Exsic., fasc. I, n. 28.

Fronds densely caespitose, very fine and capillary, 60-80 μ thick, very flaccid, deliquescently dichotomo-fastigiate, forming almost globular mass,





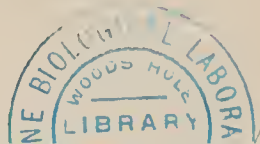
Ceramium tenerrimum (Mart) Okam. けいぎす Fig. 1-7.
Ceramium paniculatum Okam. はりいぎす Fig. 8-16.

distantly dichotomous below, gradually becoming nearer above, strongly forcipated inward at apices, sometimes emitting short lateral ramuli and often root-fibres at geniculus. The articulations are 5-10 times as long as diameter, interstices pellucid, and with cells round the geniculus slightly prominent in the lower portion. Cortical cells at geniculus are sometimes small and numerous, sometimes larger and less numerous. — In one of the dried specimens I have seen *tetraspores*, 2-3 of which are verticillately arranged on one side and not much prominent, roundish and tripartite. *Cystocarps* unknown. *Colour* light pinkish red, often almost colorless. *Substance* soft and the plant closely adheres to paper in drying.

Hab.: Mostly entangled on *Sargassum* in calm places between tide-marks near high tide. Common along the both coasts of Honshyu and Kyushu; Fusan.

Hitherto I have passed in calling the present plant in the name of *Ceramium gracillimum* Griff. and Harv. after De Toni *l.c.* But on making study by comparing with a specimen labelled *C. gracillimum* collected and determined by A. D. Cotton at Bovisand in 13, 9, 1905 (which is kept in the herbarium of Tokyo Imp. Univ.), I have found that our plant is quite different. *C. gracillimum* has dark reddish-brown colour, more erect apices, and more regularly alternate ramuli which are not widely spread out but rather standing nearer to one another. Moreover its filaments are much thicker than in the present plant which is capillary-fine and it has more or less traceable main stem or main branches.

Pl. CLXXIX, Fig. 1-7. Fig. 1: small mass of *Ceramium tenerrimum* (Mart.) Okam., $\frac{1}{1}$.—Fig. 2: portion of frond, $\frac{22}{1}$.—Fig. 3: lower articulations, $\frac{83}{1}$.—Fig. 4: apical portions of ramuli shooting forth colourless



hairs, $\frac{220}{1}$.—Fig. 5 : cortical cells at geniculus, $\frac{220}{1}$.—Fig. 6 : root-fibre, $\frac{220}{1}$.—Fig. 7 : tetraspores, $\frac{80}{1}$.

Ceramium paniculatum Okam.

Nom. Jap: *Hari-igisu*.

PL. CLXXIX, Fig. 8-16.

C. paniculatum Okam. Contr. Knowl. of the Mar. Alg. of Jap. II (Bot. Mag. Tokyo, Vol. X, 1896, no. 111), p. 36, pl. III, f. 22-23 ; Okam. Alg. Jap. Exsic. n. 2.

Fronds densely tufted, forming subglobose mass, capillary, ca. 3 cm. high, 130-200 μ thick, subdichotomo-alternately decomposed, shooting forth lesser sorts of branches in every direction. The basal portion of frond lying on substratum emits from nodes monosiphonous root-fibres which are mostly simple or distantly branched, ending in a blunt apex or expanding into a small conical disc. Branches short, patent, often almost horizontal, of subequal length for the most part, becoming shorter above with short similarly arranged ramuli. The entire ramification is thus a panicle. Ramuli very patent, armed with a subulate, 2-4 celled, coloured spine at each node longitudinally seriated along the external side ; the lower ones often slightly recurved, some forcipated at apex, others simple and straight ; the upper ones often unequally forcipated and a little recurved at extremity, becoming very patent afterwards. Articulations little shorter as the diameter in the basal portion of frond, $1\frac{1}{2}$ - $2\frac{1}{2}$ times long in the median portion, becoming shorter above. Node corticated and subequal, not being prominent, leaving interstices hyaline,—





Dilsea edulis Stackh. アカセ

Tetraspores typically verticillate around the node of ramuli in a single row, prominent, slightly bulging out from the cortical layer and bracteated by cortical cells, and enclosed in a hyaline membrane, roundish, triangularly or somewhat cruciately divided. They are often seriated in a longitudinal row, here along the external, there along the internal side or along the both sides at the same time. *Cystocarps* globular, formed on the upper portion of branch and imperfectly bracteated by a few ramuli. *Colour* light pinkish-red. *Substance* soft and flaccid, and the plant adheres to paper in drying.

Hab.: On various algae between tide-marks near high tide; common along the Pacific coast from Kyushu to Hakodate.

A distinct species belonging to the section *Ciliata* J. Ag. standing in the vicinity of *C. acanthonotum* Carm.

Pl. CLXXIX, Fig. 8-16.—Fig. 8: fronds of *Ceramium paniculatum* Okam. growing on *Corallina*, $\frac{1}{1}$.—Fig. 9: portion of frond, $\frac{3}{1}$.—Fig. 10: lower articulations, $\frac{83}{1}$.—Fig. 11: root fibres, $\frac{83}{1}$.—Fig. 12: apices of ramuli, $\frac{152}{1}$.—Fig. 13: branch bearing tetraspores, $\frac{50}{1}$.—Fig. 14: cystocarps, $\frac{80}{1}$.—Fig. 15-16: tetraspores, $\frac{220}{1}$.

Dilsea edulis Stackhouse.

Nom. Jap.: *Akaba*.

PL. CLXXX.

Dilsea edulis Stackh.; Yendo Notes on Alg. new to Jap. I, (Bot. Mag. Tokyo, Vol. XXIII, No. 270) 1909, p. 133; De Toni Syll. Alg. IV, p. 1635,—*Fucus edulis* Turner Fuci II, t. 114; Gmelin, Hist. Fuc. Tab,

26 (partim).—*Iridaea edulis* Harv. Phyc. Brit. pl. 97; Kg. Tab. Phyc. XVII, t. 3, f. a-c.—*Sarcophyllis lobata* Kg. Tab. Phyc. XVII, t. 97, f. a-c.—*Schizymenia edulis* J. Ag. Sp. Alg. II, p. 172.—*Sarcophyllis edulis* J. Ag. Epicr. p. 265; Kjellm. Alg. Arct. Sea p. 125.

Fronds tufted rising from a small scutate disc, broadly membranous, gradually tapering below into cuneate base in elongated forms and abruptly in roundish ones, rarely simple and not lobed, assuming oblong, obovate or almost roundish shape, often curved to one side, usually clefted radially into some irregularly cuneate lobes, in some almost palmately lobed. Apices are rarely entire, usually more or less worn away by waves. Frond attains the height of 15-60 cm. and breadth of 5-30 cm., and the lobes 3-10 cm. in the breadth of upper broader portion. Margin entire or irregularly crenated. *Colour* purplish-red, turning to dark red in some fully grown frond. *Substance* membranaceous, and the plant firmly adheres to paper in drying.

Hab.: Common along the coasts of Kurile Islands and Hokkaido.

Pl. CLXXX. Fig. 1: frond of *Dilsea edulis* Stackh., $\frac{1}{1}$.—Fig. 2: another form of frond, shown in the outline, $\frac{1}{1}$.—Fig. 3: portion of the cross-section of frond, showing two auxiliary-cell-branches; line *a a* indicates the median portion of the section, $\frac{353}{1}$.—Fig. 4: auxiliary cell branch, $\frac{567}{1}$.—Fig. 5: portion of the cross-section of frond showing procarp; line *a a* indicates the middle portion of the section, $\frac{353}{1}$.—Fig. 6: tetraspores in the cross-section of frond, $\frac{226}{1}$.—Fig. 7: cortical structure, $\frac{353}{1}$.

CORRECTION.

Vol. IV, No. 4, p. 75, 8 lines; for PL. CLXIV read PL. CLXIX.

Vol. IV. No. 5, Wrapper: for No. IV (PL. CLXVI-CLXX) read

No. V (PL. CLXXI-CLXXV).

Halymenia dilatata Zanard.¹⁾

ふいりぐさ 岡村 稱.

第 CLXXVI 圖版; 第 CLXXVII 圖版, 3-4 圖.

體ハ小サキ盤狀根ヨリ立チ, 莖ヲ有シ又ハ之ヲ缺キ, 莖ハ短クシテ稍太ク, 急ニ腎臟形ノ基部ヲ有スル濶キ膜ニ擴ガル; 體ハ概ネ略ボ圓形又ハ横ニ擴ガリ時トシテハ廣キ長橢圓形ヲナシ, 波狀ニ褶ヲナシテチヂレ, 單條又ハ多少分裂シ, 高サ幅サトモ 15-20 cm. ニ達ス. 緣邊ハ全緣, 又ハ粗ク鋸齒狀ニ出入シ, 鋸齒ハ或ハ鈍圓ナルコトアリ又ハ舌狀裂片ヲ以テ總ヲ着ケタル如クナリテ多少チバレタリ, 稀ニ表面ヨリ小サキ乳嘴狀又ハ舌狀突起ヲ出ス; 而シテ表面ハ平滑ナレドモ平坦ナラズシテ粗ク凹凸シテ皺ヲナス. 四分孢子囊ハ體ノ表面ニ散在ス. 囊果ハ小サキ點狀ニシテ表面ニ散在ス. 色ハ紫紅色ニシテ往往不規則ナル形狀ノ小サキ斑紋ヲ呈スルコトアリ. 質ハ粘質アル膜質ニシテ莖ヲ除ク外紙ニ密着ス.

產地: 3-9 尋ノ深所ニ在リ. 琉球中城灣, 種子島, 大隅佐多岬, (8-9 尋), 薩摩坊, 日向, 肥前口ノ津字島ノ内 (3 尋), 紀洲瀬戸.

分布: 紅海.

體及囊果ハ *Halymenia* 屬ノモノナリ. 助細胞ハ稍大ニシテ長橢圓形又ハ卵形ヲナシ, 5 條乃至數條ノ皮層絲ガ上ヨリ下垂シテ一點ニ集中セル所ニ存ス (第 CLXXVII 圖版, 3a); 此數條ノ皮層絲ハ後囊果ノ仁ヲ圍繞スル網狀ノ組織トナルナリ. De Toni 氏ハ此植物ヲ *Sebdenia* 中ニ置キタレドモ余ハ之ニ賛同スルコト能ハザルモノナリ.

1) *Halymenia* 屬ノ性質ハ第一卷 175 頁ニ在リ.

第CLXXVI圖版。 1: *Halymenia dilatata* Zanard., ふいりぐさ, ノ實ナキ體, $\frac{1}{1}$.—2: 體ノ横斷面, 少シク廓大.—3: 皮層, $\frac{353}{1}$.—4: 四分胞子, $\frac{353}{1}$.

第CLXXVII圖版, 3-4圖。 3: 助細胞, *a* (アルコール品), $\frac{353}{1}$.—4: 囊果 (アルコール品), $\frac{48}{1}$.

Sarcodia J. Agardh 1852.

あつばのり屬.

MELANTHALIEAE, SPHAEROCOCCACEAE.

たまみ科, メランサリア亞科.

體ハ扁平又ハ葉狀ニシテ又狀又ハ概ネ不規則ニ分裂シ, 往々縁邊ヨリ枝ヲ副出シ, 絲狀—細胞組織ニテ成ル; 即チ體ノ内部ニ於テハ絲狀細胞ヨリ成レル髓絲アリテ絲ハ長キ節間ヲ有シ可ナリ緩ク錯綜シ同様ノ形セル根様絲ヲ伴ナフ; 皮層ハ密ニ集マレル細胞ヨリ成リ, 外方ニ漸次小形トナル.—四分胞子ハ體ノ表面ニ散在シ, 横ニ分裂ス. 囊果ハ殆ド球狀ニシテ突出シ或ハ球狀ニシテ短キ柄ヲ有シ, 體ノ表面ニ散在シ又ハ縁邊ニ沿フテ存ス而シテ體ノ表面ニ直接ニ形成セラルルカ又ハ縁邊或ハ表面ニ存スル極メテ小ナル疣ニ形成セラル. 果皮ハ甚ダ厚ク, 仁ハ縦ニシテ其上部ハ穹狀ヲナシ下部ハ廣キ基底ヲ以テ僅ニ發達セル胎座ヨリ出ヅ. 胞子絲ハ可成リ密ニ集リ, 其下部ハ網狀ニ癒着セル短キ細胞ヲ存シ上部ハ甚シク密ニ相集リタル長キ束狀ヲナセル多數ノ絲トナリテ游離ス; 胞子ハ此束狀ノ絲ノ頂端ニ一個又ハ二個相連ナリテ成ル.—一個ノ囊果ニ於テ時ニ二個ノ仁ノ形成セラルルコトアリ,

印度洋及オーストラリアノ海ノ暖部ニ産シ約5種アリ。
茲ニ圖説スルモノハニュージールランド、錫蘭等ニ普通ノ種ナ
リ。——屬ノ名ハSarx, Sarcos (厚キ)ヨリ成ル。

Sarcodia Montagneana (H. et H.) J. Ag.

あつばのり 岡村稱。

第CLXXVII圖版, 1-2圖; 第CLXXVIII圖版, 8-11圖。

體ハ單獨又ハ僅ニ叢生シ, 小サキ盤狀根ヨリ立チ, 基部楔形ニシテ往々短キ稍太キ莖ヲ有シ又ハ殆ド莖ナク, 上方ニハ3-4回又狀ニ分岐セル或ハ不規則ニ分裂セル體ニ擴ガル; 體形及大サトモ極メテ變化シ易ク, 或モノハ扇狀ヲナシ, 或モノハ不規則ニ分岐シ, 高サ10-20 cm. アリ。 枝ハ圓キ腋ヲ以テ廣開シ或ハ廣キ線狀ヲナシ或ハ廣キ楔形ニシテ幅ハ5-10 mm. ヨリ4-5 cm. ニ達シ, 枝端鈍圓, 舌狀, 截形又ハ二裂ス。 緣邊ハ全緣, 平滑又ハ成長スルニ隨ヒ疣狀若クハ乳嘴狀突起ヲ有シ, 往々單條ニシテ舌狀ナル若クハ1-2回又狀ニ分レタル楔形ノ副枝ヲ生ジ, 老成セルモノニテハ體ハ極メテ厚クナレリ。——四分胞子ハ體ノ表面ニ散在ス。 囊果ハ球狀—半球狀ニシテ概ネ緣邊ニ沿ヒ若クハ緣邊ニ近ク存シ, 時トシテハ兩面ニ密布ス。 色ハ褐紅色又ハ黃色ヲ帶ブ。 質ハ厚キ膜質ニシテ老成スルトキハ殆ド革質トナリ, 體ハ乾燥スルトキハ不充分ニ紙ニ附着ス。

產地: 往々海濱ニ打揚ゲラル。 紀州尾鷲(德洲), 八丈島, 三宅島, 志州, 上總, 江ノ島, 三崎, 陸中宮古。

分布: ニュージールランド, セーロン島。

第CLXXVII圖版, 1-2圖。 1: *Sarcodia Montagneana* (H. et H.) J. Ag., あつばのり, ノ實ナキ體, 1.—2: 囊果ヲ有スル他ノ體, 1.

第CLXXVIII圖版, 8-11圖. 8: 四分孢子ヲ有スル體ノ横斷面ノ一部, $\frac{220}{1}$.—9: 縱斷面ノ一部, $\frac{152}{1}$.—10: 囊果ノ縱斷面, $\frac{48}{1}$.—11: 成胞絲, $\frac{353}{1}$.

Champia expansa Yendo.¹⁾

うすばわつなぎさう 岡村稱.

第CLXXVIII圖版, 1-7圖,

體ハ扁平—扁壓, 正シク叉狀ニ分岐シ, 扇狀ニ擴ガリ, 全體ノ輪廓ハ腎臟形ヲナシ, 急ニ楔形ノ基部トナル, 高サ6-10 cm. アリ. 各部ハ廣キ線狀又ハ楔形ニシテ直立—廣開シ又ハ廣開シ, 腋圓ク, 幅6-10 mm. アリ, 少距離ヲ距テテ重圈狀線アリ, 枝端ニ裂シ老成部ノ縁邊ヨリ副枝ヲ生ズ.——囊果ハ卵圓形ニシテ體ノ表面ニ坐ス. 色ハ紫紅色. 質ハ膜質ニシテ體ハ乾燥スルトキハ密ニ紙ニ附着ス.

產地: 相洲三崎8尋ノ海底(今村), 銚子(成田), 志洲和具.

第CLXXVIII圖版, 1-7圖. 1: *Champia expansa* Yendo, うすばわつなぎさうノ體, $\frac{1}{1}$.—2: 體ノ横斷面, $\frac{220}{1}$.—3: 體ヲ表面ヨリ見タルモノ, $\frac{220}{1}$.—4: 横隔膜ヲ通シテ斷リタル縱斷面, $\frac{220}{1}$.—5: 囊果ヲ有スル體ノ一部, $\frac{1}{1}$.—6: 囊果, $\frac{22}{1}$.—7: 囊果ノ縱斷面, $\frac{48}{1}$.

1) *Champia* 屬ノ性質ハ日本海藻圖說第一卷第五頁ニ在リ.

Ceramium tenerrimum (Mart.) Okam.

けいぎす.

第CLXXIX圖版, 1-7圖.



體ハ密叢シテ殆ド球狀ノ團塊ヲナシ, 複叉狀ニ分岐シ, 絲ハ極メテ纖細ニシテ $60-80\mu$ 太ク, 甚シク軟弱ニシテ下部遠ク叉狀ニ分レ漸々上方ニ近ツクニ從ヒ接近シテ分岐シ, 頂端強ク内方ニ刺叉ノ如ク屈曲シ, 時トシテハ短キ側枝ヲ出シ, 往々節々ヨリ絲狀根ヲ發出ス. 關節ハ徑ノ5-10倍長ク, 節間ハ無色ニシテ各節ニ細胞ヲ有シ, 體ノ下部ニテハ節ハ少シク隆起ス; 節ノ周圍ノ皮層細胞ハ時ニ小ニシテ多數ナルコトアリ時ニ大ニシテ小數ナルコトアリ. 乾燥標品ニテ四分胞子ヲ見タルニ, 胞子ハ圓クシテ三角錐形ニ分レ, 節ノ一方ノ側ニ於テ2-3輪狀ニ並ビ外部ニ隆起セズ. 囊果ハ詳ナラズ. 色ハ淡紅色ニシテ往々極メテ淡シ. 質ハ軟弱ニシテ密ニ紙ニ附着ス.

產地: 靜ナル場所ニアリテ概ネほんだわら類ニ絡マリ, 高潮線ニ近ク潮線間ニ在リ. 長崎, 天草島, 島原, 神戸, 紀州瀬戸, 和歌浦, 鳥羽, 伊豆, 新島, 相模, 上總八幡, 安房, 磐城, 佐渡, 羽前由良, 越後背合; 釜山.

從來予ハ De Toni Syll. Alg. ニヨリテ本植物ヲ *Ceramium gracillimum* Griff. et Harv. ナリトシタレドモ, 東京帝國大學植物學教室ニ藏スル A. D. Cotton 氏ガ英國 Bovisand ニテ採集シタル其種ノ標本ヲ見ルニ當テ其全ク本植物ト異ナルコトヲ知レリ. *C. gracillimum* ハ暗褐紅色ニシテ枝端ハ概ネ直立シ, 小枝ハ可ナリ正シク互生シ餘リ廣開セズシテ寧ロ互ニ近ク接近シテ出デ, 且ツ絲ハ本植物ヨリモ數倍太ク, 多少區別シ得ベキ主軸若クハ主枝ヲ見ル. 之ニ依テ予ハ今 Martens ガ命名シタル種名ヲ正シトシ此處ニ之ヲ革メタリ.

第CLXXIX圖版, 1-7圖. 1: *Ceramium tenerrimum* (Mart.) Okam.
ノ小叢, $\frac{1}{1}$.—2: 體ノ一部, $\frac{22}{1}$.—3: 下部ノ關節, $\frac{83}{1}$.—4: 小枝ノ頂端
ニシテ無色ノ毛ヲ出ス狀, $\frac{220}{1}$.—5: 節部ノ皮層細胞, $\frac{220}{1}$.—6: 絲
狀, $\frac{220}{1}$.—7: 四分胞子, $\frac{80}{1}$.

Ceramium paniculatum Okam.

はりいぎす.

第CLXXIX圖版, 8-16圖.

體ハ團叢ヲ爲シ, 毛細狀ニシテ, 約3 cm. 高く, 130-200 μ 太ク,
屢々稍叉狀様—互生ニ分岐シ, 各方面ニ短キ枝ヲ出ス. 體ノ
下部ハ他物ニ附着シ節々ヨリ單管絲狀ノ根ヲ出シ, 根ハ概ネ
單條又ハ遠ク分岐シ, 先端鈍圓又ハ小サキ圓錐狀ノ盤ニ展ガ
ル. 枝ハ短ク, 廣開シ, 往々略ボ水平ニ出デ, 大抵稍同一ノ長サ
ニシテ體ノ上部ノ方ニ漸次短クナリ, 同様ノ配列ヲナセル短
キ小枝ヲ存ス. 枝態ハ斯克テ複總狀ナリ. 小枝ハ甚シク廣
開シ, 2-4個細胞ヨリ成レル細尖ナル有色ノ刺ヲ各節ニ存シ,
刺ハ枝ノ外側ニ沿フテ縦ニ列ル: 下部ノ小枝ハ往々輕ク後方
ニ反リ或モノハ頂端刺又ノ如ク屈曲シ, 或モノハ單條ニシテ
直出ス; 上部ノ枝ハ先端往々不同ニ屈曲シ, 先端少シク後方ニ
反リ後甚シク廣開ス.——四分胞子ハ規則トシテハ小枝ノ節ノ
周圍ニ横ニ一列ニ輪生シ, 少シク皮層ヨリ膨出シテ隆起シ皮
層細胞ヲ以テ苞ノ如ク蔽ハレ, 透明ナル膜中ニ存シ, 圓クシテ
三角錐形又ハ稍十字様ニ分裂ス. 四分胞子ハ往々縦ニ列シ,
此處ニハ枝ノ外側ニ, 彼處ニハ内側ニ沿ヒ又ハ同時ニ兩側ニ
在ルコトアリ. 囊果ハ球狀ニシテ, 枝ノ上都ニ形成セラレ2-3
ノ小枝ヲ以テ不完全ニ苞ノ如ク圍マル. 關節ノ長サハ體ノ

下部ニ於テ直徑ヨリ少シク短ク、中央部ニテハ其一倍半乃至二倍長ク、上部ニハ又短シ。節々ハ皮層細胞ヲ存シテ隆起セズ、節間部ハ透明ナリ。色ハ淡キ紅色。質ハ軟クシテ纖弱、乾燥スルトキハ密ニ紙ニ附着ス。

產地：高潮線ニ近ク潮線間ノ種々ノ海藻ニ附着ス。豊後無垢島、伊豆大島(白井)、房州白濱、上總、磐城、函館。果實：—夏季。

第 CLXXIX 圖版、8-16 圖。8: さんごもニ附着セル *Ceramium paniculatum* Okam. ノ體, $\frac{1}{1}$ 。—9: 體ノ一部, $\frac{3}{1}$ 。—10: 下部ノ關節, $\frac{83}{1}$ 。—11: 絲狀根, $\frac{83}{1}$ 。—12: 小枝ノ頂端, $\frac{152}{1}$ 。—13: 四分胞子ヲ有スル枝, $\frac{50}{1}$ 。—14: 囊果, $\frac{80}{1}$ 。—15-16: 四分胞子, $\frac{220}{1}$ 。

Dilsea Stackhouse 1809.

あかば屬.

DUMONTIACEAE. りうもんさう科.

體ハ扁平葉狀ニシテ莖ヲ有シ、分裂スルコトナク又ハ不規則ニ分裂シ或ハ破レタリ；髓層ハ厚ク、屢々分岐セル關節セル絲ヨリ成リ其間々ニ根様絲ノ錯綜スルモノアリ；根様絲ハ始ハ甚ダ緩ク、後漸次密ナルニ至ル；皮層ハ多少厚ク、内方ニハ漸次大ナル細胞ヨリ成リ、緩ク集リ、漸々髓層ニ移リ、外方ニハ小細胞ヨリ成リテ密ナリ、時トシテハ念珠狀ニ連リテ表面ニ直角ニ列ス。—四分胞子ハ體ノ表面ニ一定ノ規則ナク境セラレタル場所ニ存シ、僅ニ厚クナリタル皮層中ニ多數ニ形成セラレ、十字様ニ分裂ス。胎原列及助細胞列ハ可ナリ長ク蠕蟲ノ如ク屈曲シ、皮層ノ内側ノ界附近(髓層ニ移ル部分)ノ組織ノ幾分弛

緩セル部分ニ多數ニ形成セラレ、其附近ニ中性ノ絲ヲ多數ニ伴ナフ、其絲ハ關節短クシテ蠕蟲狀ヲナス。囊果ハ髓ノ絲狀組織中ニ極メテ多數ニ存シ、可ナリ小ニシテ全ク外方ニ隆起セズ；仁ハ球狀—腎臟形ニシテ多ク枝ヲ出シタル可ナリ緩ク集リタル多數ノ胞子絲ヨリ成リ、中性ノ組織ノ離レ離レノ絲之ヲ貫通ス。

太西洋及太平洋ノ北部ニ2-3種アリ。此處ニ圖說スルモノ其模範種ナリ、一屬ノ名ハ Ireland ニテ此植物ヲ Dils ト稱スルニ因ル。

Dilsea edulis Skackh

あかば。三陸方言。

第CLXXX圖版。

體ハ小サキ盤狀根ヨリ叢生シテ立ち、廣キ膜狀ニシテ、長キ體形ノモノニテハ漸々下方ニ細クナリテ楔形ヲナシ、圓キ形ノモノニテハ急ニ細リ、罕ニ單條ニシテ分裂セズ、體形ハ長橢圓形、倒卵形又ハ殆ド圓形ヲナシ往々一方ノ側ニ曲リ、通常放射狀ニ裂ケテ數片ノ不規則ナル楔形ノ裂片ヲナシ、時ニハ殆ド掌狀ニ分裂ス。頂端ハ罕ニ全縁ニシテ、通常多少波浪ノ爲ニ損ス。高サ15-60 cm. 幅5-30 cm. アリ。裂片ノ幅ハ上部ノ廣キ所ニテ3-10 cm. アリ。縁邊ハ全縁又ハ不規則ニ鈍鋸齒狀ヲナス。色ハ紫紅色ニシテ老成セルモノニテハ暗紅色ナリ。質ハ膜質ニシテ體ハ乾燥スルトキハ紙ニ附着ス。

產地：潮線間ノ岩石ニ附着ス。得撫島、根室、厚岸、沙流太、室蘭、小樽、函館、陸中本吉郡、陸奥鮫、岩屋、(東)。

分布: グリーンランド, ノルウェー, 英, 佛.

第CLXXX圖版. 1: *Dilsea edulis* Stackh., あかば, ノ體, $\frac{1}{1}$.—2: 他ノ形ヲ輪廓ノミニテ示ス, $\frac{1}{1}$.—3: 横斷面ノ一部ニシテ2個ノ助細胞列ヲ示ス; *aa*線ハ斷面ノ中央ヲ示ス, $\frac{353}{1}$.—4: 助細胞列, $\frac{567}{1}$.—5: 體ノ横斷面ノ一部ニシテ胎原列ヲ示ス; *aa*線ハ斷面ノ中央ヲ示ス, $\frac{353}{1}$.—6: 四分胞子, $\frac{220}{1}$, —7: 皮層, $\frac{353}{1}$.

正 誤

第四卷第四集 75 頁上ヨリ 8 行. PL. CLXIV ハ PL. CLXIX ノ誤,

第四卷第五集表紙: Contents of No. IV (PL. CLXVI-CLXX.) ハ Contents of No. V. (PL. CLXXI-CLXXV) ノ誤.

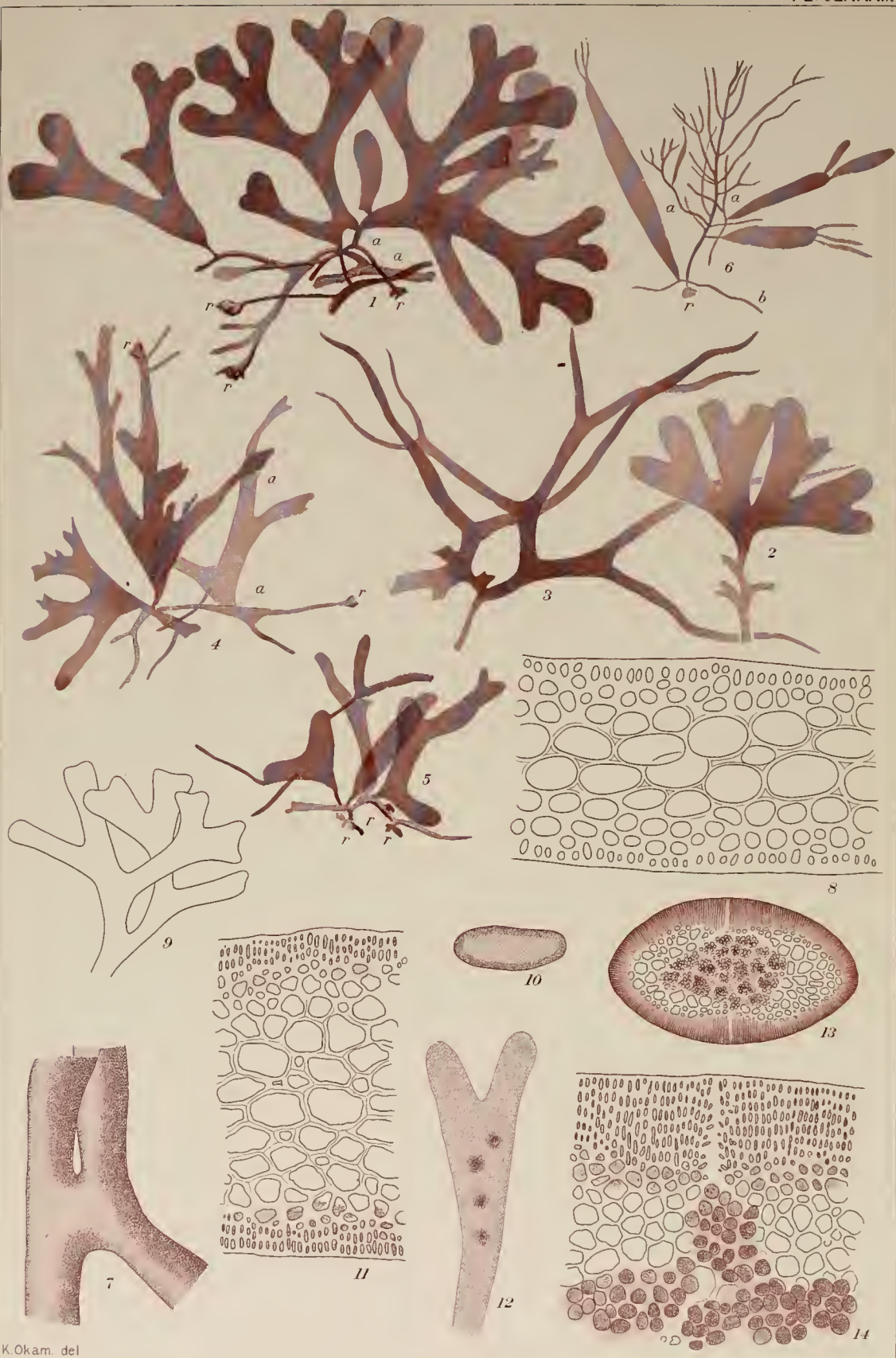
第四卷第五集 89 頁: *Bangia* 屬ノ性質ノ末ニ下ノ行ヲ加フ:—
屬ノ名ハ植物學者 Hofman-Bang 氏ノ名ニ因ル.

第四卷第五集 103 頁: *Rhabdonia* Harv. = 1847 ナ加フ.

„ „ 104 頁: *Rhabdonia* 屬ノ性質ノ末ニ下ノ行ヲ加フ:—
屬ノ名ハ *rhabdos* (小枝) ヨリ成ル.



Pikea californica Harv. みちがへさう Fig. 1-6.
Gymnogongrus flabelliformis Harv. おきつのり Fig. 7-9.



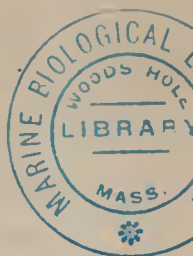
K. Okam. del

Phyllophora intricata Okam. sp. nov. まきごしぼり Fig. 1-8.
Gymnogongrus flabelliformis Harv. おきつのもり Fig. 9-14.

Pikea californica Harv.

Nom. Jap. : *Michigaeso*.

PL. CLXXXI, Fig. 1-6.



Pikea californica Harv. Ner. Bor. Amer. II. p. 246; III. p. 131, tab. 49B; J. Ag. Epicr. p. 253; Id. Florid. Morph. t. 17, f. 6-10; DeToni Syll. IV, p. 1631; Coll., Hold. and Setch. Phycoth. Bor. Amer. XVIII, no. 897.—*Pikea?* sp. Okam. Nippon Sorui Meiji (2nd., ed.) p. 114.

Fronds densely tufted rising from common scutate disc, ancipito-compressed, (1-1.5 mm. in diam.), thickened below to cylindrical stipe, without percurrent stem, but divided into many main segments which are subdichotomo-pinnately branched, 5-10 cm. high. Branches of every order widely parted, distichously disposed in an irregular manner, some alternate or opposite, others subfasciculate or subsecund, with longer and shorter ones intermixed without any definite order, and furnished with minute simple or branched ramuli. Central axis consists of cells of larger calibre, from which branches arise on all sides; of them those standing on the flank give rise to the central axis of lateral branches, while those on the surface-side remain short without developing to branches. From the cells of axis cortical cell-filaments arise, and rhizoidal cells which fill up the inner cavity of frond are abundantly produced both from axial and infra-cortical cells. In growing apex terminal cells are horizontally articulated.—*Fruits* of both kinds unknown. *Colour* beautiful purplish-red. *Substance* soft-cartilaginous and the plant imperfectly adheres to paper in drying.

Hab.: Below low-tide; from Cape Inuboe to Kinkwasan.

PL. CLXXXI, Fig. 1-6. Fig. 1: sterile frond of *Pikea californica*

Harv., $\frac{1}{1}$.—Fig. 2: growing point of frond, $\frac{567}{1}$.—Fig. 3: outline of the cross-section of branch, $\frac{34}{1}$.—Fig. 4: portion of the cross-section, $\frac{353}{1}$.—Fig. 5: tangential section of frond through the central axis and an axial branch, $\frac{152}{1}$.—Fig. 6: portion of the same, showing rhizoids and the formation of cortical cell-filaments from axial cells, $\frac{353}{1}$.

Gymnogongrus flabelliformis Harv.

Nom. Jap. ' *Okitsunori*.

PL. CLXXXI, Fig. 7-9; PL. CLXXXII, Fig. 9-14.

Gymn. flab. Harv. in Gray's List of Jap. Pl. p. 332; Sur. Alg. Jap. p. 36, t. XXIV B., DeToni Phyc. Jap. nov. p. 25; Id. Syll. Alg. IV, p. 248; Okam. Nippon Sorui Meii (2nd. ed.) p. 32; Id. Alg. Jap. Exsic. Fasc. I, n. 10.—*Gymn. japonicus* Sur. Alg. Jap. p. 36, tab. 24a.

Fronds caespitose, rising from callous disc, narrow-linear, compressed, many times regularly dichotomo-flabellate, fastigiate, closely forking, with segments erecto-patent standing on roundish axils, and attain the height of 4-8 cm. Segments are usually linear and equally broad or a little cuneate toward forks, 1-1.5 mm. in breadth, but sometimes become very slender and almost filiform; margin with or without proliferations which are either simple or once or 2-3 times forked. Dichotomous segments are usually near to each other, but in some widely separated. Apex obtuse or pointed, sometimes slightly dilated and emarginated or bifid. *Cystocarps* produced in ultimate and penultimate segments, often 3-4 seriated in one row, slightly prominent on both surfaces. *Colour* vinoso-purple, becoming almost black in drying. *Substance* cartilaginous and the plant does not adhere to paper in drying.

Hab.: on rocks near high tide. Common along both coasts of

the country from Kyushu to the southern part of Hokkaido ; Chosen.

Pl. CLXXXI, Fig. 7-9. Fig. 7: cystocarpic fronds of *Gymnogongrus flabelliformis* Harv., $\frac{1}{1}$.—Fig. 8: portion of another frond, $\frac{1}{1}$.—Fig. 9: cystocarpic frond having distantly forked segments, $\frac{1}{1}$.

Pl. CLXXXII, Fig. 9-14. Fig. 9: apex of branch, $\frac{7}{1}$.—Fig. 10: cross-section of branch, $\frac{22}{1}$.—Fig. 11: portion of cross-section of frond, $\frac{220}{1}$.—Fig. 12: cystocarpic branch, $\frac{7}{1}$.—Fig. 13: section of cystocarp, $\frac{48}{1}$.—Fig. 14: portion of nucleus, $\frac{220}{1}$.

Phyllophora intricata Okam. n. sp.

Nom. Jap.: *Masago-tsunagi*.

Pl. CLXXXII, Fig. 1-8.

Fronds forming intricate mass, erect, rising from creeping segments which are fixed to the substratum by small radical discs, flat, irregularly dichotomous, with or without short stipe, 5-7 cm. high. Fronds rather variable in shape, more or less dichotomous, but sometimes subpinnately branched. Segments patent with round axils. Branches adhere to each other at the places where they come in contact by forming root-like discs or simply by fusing together; they often become fixed to substratum by radical discs made on their apices and they emit, both from margins and surfaces, filiform or more or less broad and shortly stipitate segments, which more and more increase the intrication by the process just spoken about. Segments vary in breadth from 2 to 5 mm., some broadly linear, others almost leafy, while in extreme ones almost filiform (fig. 6). Apex of segments oblong, spatulate, ligulate or pointed. *Fruits* of both kinds unknown. *Colour* purplish-red. *Substance* soft cartilaginous and the plant does not adhere to paper in drying.

Hab.: washed ashore; Enoshima, Iwaki, Nō (Prov. Yechigo).

Late Mr. Yendo enumerates *Phyllophora palmettoides* J. Ag. in his Notes on Algae IV (Bot. Mag. Tokyo 1916, p. 59) which seems most probably to be the present plant. The present plant chiefly differs from that by having intricate and creeping segments and not having frond furnished with stem standing from callous disc.

Pl. CLXXXII, Fig. 1-8. Fig. 1-3: different forms of fronds of *Phyll. intricata* Okam. n. sp. from Enoshima, $\frac{1}{1}$.—Fig. 4-5: same from Prov. Iwaki, $\frac{1}{1}$.—Fig. 6: form with slender branches from Enoshima; from *b* to right more branches, not given in figure, $\frac{1}{1}$.—Fig. 7: branches fused together, $\frac{3.4}{1}$.—Fig. 8: cross section of frond, $\frac{3.5.3}{1}$. *r*, radical discs; *a*, adhering points.

Euptilota articulata (J. Ag.) Schm.

Nom. Jap.: *Iso-shinoba*.

Pl. CLXXXIII, Fig. 1-9.

Euptilota articulata (J. Ag.) Schmitz Klein. Beitr. Florid. VI (1896) p. 7; DeToni Syll. IV, p. 1370.—*Ptilota articulata* J. Ag. Sp. II, p. 100; Id. Epicr. p. 78; Kütz. Tab. Phyc. XII, t. 56, f. d-e.

Fronds filiform, ancipito-compressed, subcylindrical below, thickly branched in alternato-pinnate manner, with widely parted divisions, 5-10 cm. high. Basal portion or lower half of main branches are sometimes naked in well-grown frond, but the remaining portions are regularly provided with longer or shorter pinnae which arise alternately close to each other. Branches (fig. 2) are articulated in flexuose manner with subcubical or pentagonal cells in their upper portion of the axis, while the lower portion is more or less covered with rhizoidal cells which make their appearance from basal cells of pinnae. Cortication



K. Okam, del.

Euptilota articulata (J. Ag.) Schm. いそしのぶ, Fig. 1-9.
Asparagopsis hamifera (Hariot) Okam. かぎのり, Fig. 10-11.



K. Kam., del.

Chrysymenia Uvaria (L.) J. Ag. はなのえだ, Fig. 1-9.
Asparagopsis hamifera (Hariot) Okam. かぎのり, Fig. 10-16.

becomes thicker and thicker below, and in the thicker portion of branches the central axis is thickly covered with longitudinally running rhizoidal cells, and the cortical layer of a thicker branch consists of filiform cells. Pinnulae thoroughly ecorticated, arise alternately from every articulation of pinnae, and pinnellae are in similar arrangement. As the age of plant proceeds, pinnae grow up to branches, and pinnulae to pinnae. Length of articulation is subequal to or a little longer than the diameter through the whole length of frond. *Tetraspores* produced on pinnellae, sessile, tripartite. *Cystocarps* unknown. *Colour* pinkish-red. *Substance* membranaceous and the plant imperfectly adheres to paper in drying.

Hab.: Prov. Awa, Kii, and Shima.

Pl. CLXXXIII, Fig. 1-9. Fig. 1: frond of *Euptilota articulata* (J. Ag.) Schm., $\frac{1}{1}$.—Fig. 2: upper portion of branch showing the arrangement of pinnae; *a*, apical cell, $\frac{8.3}{1}$.—Fig. 3: terminal portion of fig. 2 showing the arrangement of pinnulae and beginning of rhizoidal cells from basal cells of pinnulae; *a*, apical cell; $\frac{15.2}{1}$.—Fig. 4: cross-section of the basal portion of branch, $\frac{22.0}{1}$.—Fig. 5: cross-section of the upper portion of stem, $\frac{4.8}{1}$.—Fig. 6: cross-section of the lower portion of stem, $\frac{10.5}{1}$.—Fig. 7: longitudinal section of stem shown in fig. 6, $\frac{10.5}{1}$.—Fig. 8: surface-view of stem; cells obliquely running are those from the base of branches, $\frac{15.2}{1}$.—Fig. 9: tetraspores formed on pinnellae $\frac{22.0}{1}$.

***Asparagopsis hamifera* (Hariot) Okam.**

Nom. Jap.: *Kagi-nori*.

Pl. CLXXXIII, Fig. 10-11; Pl. CLXXXIV, Fig. 10-16.

Bonnemaisonia hamifera Hariot Alg. de Yokoska p. 223; Okam. Nippon Sorui-Mei (2nd. ed.) p. 62; De Toni Syll. IV, p. 768.—



Hypnea adunca J. Ag. Collins, Hold. and Setch. P. B. A. n. 490.

Fronds forming entangled mass on other algae, with filiform, thicker, or cylindrical stem or main branches, 3-4 times pinnately branched, 10-15 cm. high. Branches alternate, patent, rising on all sides in pyramidal outline. They are densely covered with short, soft, hair-like ramuli. In spring, ramuli are very abundant and branches are penicillate, but, later they become less numerous and rather coarse, and assume somewhat comb-like appearance. Some of branches remain quite naked and swell up beneath the apex forming hooks by which branches entangle to each other. Ramuli are arranged in irregularly alternate (not strictly decussate) pairs; and main and lesser branches are also primarily arranged in the similar manner, but one of the pair being alternately suppressed, they become to assume alternate appearance. In sterile frond, ramuli are alternate, but in fertile ones reproductive organs are formed on one of the pair.—*Tetraspores* unknown. *Antheridia* oblong, shortly pedicelled. *Cystocarps* ovato-globose or globular, shortly stipitate. *Colour* purplish-red often fading to yellowish. *Substance* soft and the plant closely adheres to paper in drying.

Hab.: entangled on various algae between tide marks and below low tide; rather common from Prov. Awa to Hakodate.

Present plant which was put under *Bonnemaïsonia* by Hariot is indeed *Asparagopsis*, as one can see from its filiform and penicillate branches and structure of frond.

Pl. CLXXXIII, Fig. 10-11. Fig. 10: cystocarpic frond of *Asparagopsis hamifera* (Hariot) Okam., $\frac{1}{1}$.—Fig. 11: branch bearing cystocarps, $\frac{13}{1}$.

Pl. CLXXXIV, Fig. 10-16. Fig. 10: longitudinal section of branch, magd.—Fig. 11: cross-section of branch (from herbarium-specimen) magd.—Fig. 12: apex of main branch; *a*, apical cell; $\frac{353}{1}$.—Fig. 13: ramuli

bearing teeth-like processes near apex, $\frac{240}{1}$.—Fig. 14: branch bearing antheridia, $\frac{13}{1}$.—Fig. 15: cystocarp, $\frac{34}{1}$.—Fig. 16: Spores. magd.

Chrysymenia Uvaria (L.) J. Ag.

Nom. Jap.: *Hanano-eda*.

PL. CLXXXIV, Fig. 1-9.

Chrysymenia Uvaria (L.) J. Ag. Sp. Alg. II. p. 214; Id. Epicr. p. 324; Id. Florid. Morph. t. XVI, f. 20-22; Harv. Ner. Bor. Amer. p. 191, t. XXb, f. 1-3; Hauck Meeresalg. p. 160, f. 66; Börgesen Some new or little Known W. Ind. Florid. II, p. 189, f. 10; De Toni Syll. IV, p. 543.—*Gastroclonium Uvaria* Kütz. Tab. Phy. XV, t. 97.—*Fucus ovalis* β . *botryoides* Turn. Fuci, p. 23 (partim).

Only one dried specimen now before us. *Frond* dichotomously branched, with slender cylindrical stem measuring ca. 1 mm. in thickness. Branches widely parted and flexuose, solid, provided with simple bladder-like obovate ramuli which are furnished with short pedicels, 1.5-3 mm. long taking both together. *Fruits* of both kinds unknown. *Colour* purplish vinoso-red. *Substance* membranaceous and rather firm in stem, and the plant pretty well adheres to paper in drying.

Hab.: Tanegashima (Egawa). Very rare.

The anatomical characters well agree with those illustrated in Börgesen's *l. c.*

PL. CLXXXIV, Fig. 1-9. Fig. 1: frond of *Chrysymenia Uvaria* (L.) J. Ag., $\frac{1}{1}$.—Fig. 2: bladder-like ramuli or ramenta, $\frac{10}{1}$.—Fig. 3: cross-section of a young ramentum with a gland-cell, g., $\frac{353}{1}$.—Fig. 4: surface-view of a young ramentum, $\frac{353}{1}$.—Fig. 5: surface-view of an

older ramentum, $\frac{3.53}{1}$.—Fig. 6: inner surface of a ramentum viewed from the inside showing two gland-cells, g, g, $\frac{1.52}{1}$.—Fig. 7: cross-section of stem, $\frac{8}{1}$.—Fig. 8: portion of the same, $\frac{8.3}{1}$.—Fig. 9: longitudinal section of stem, $\frac{8.3}{1}$.

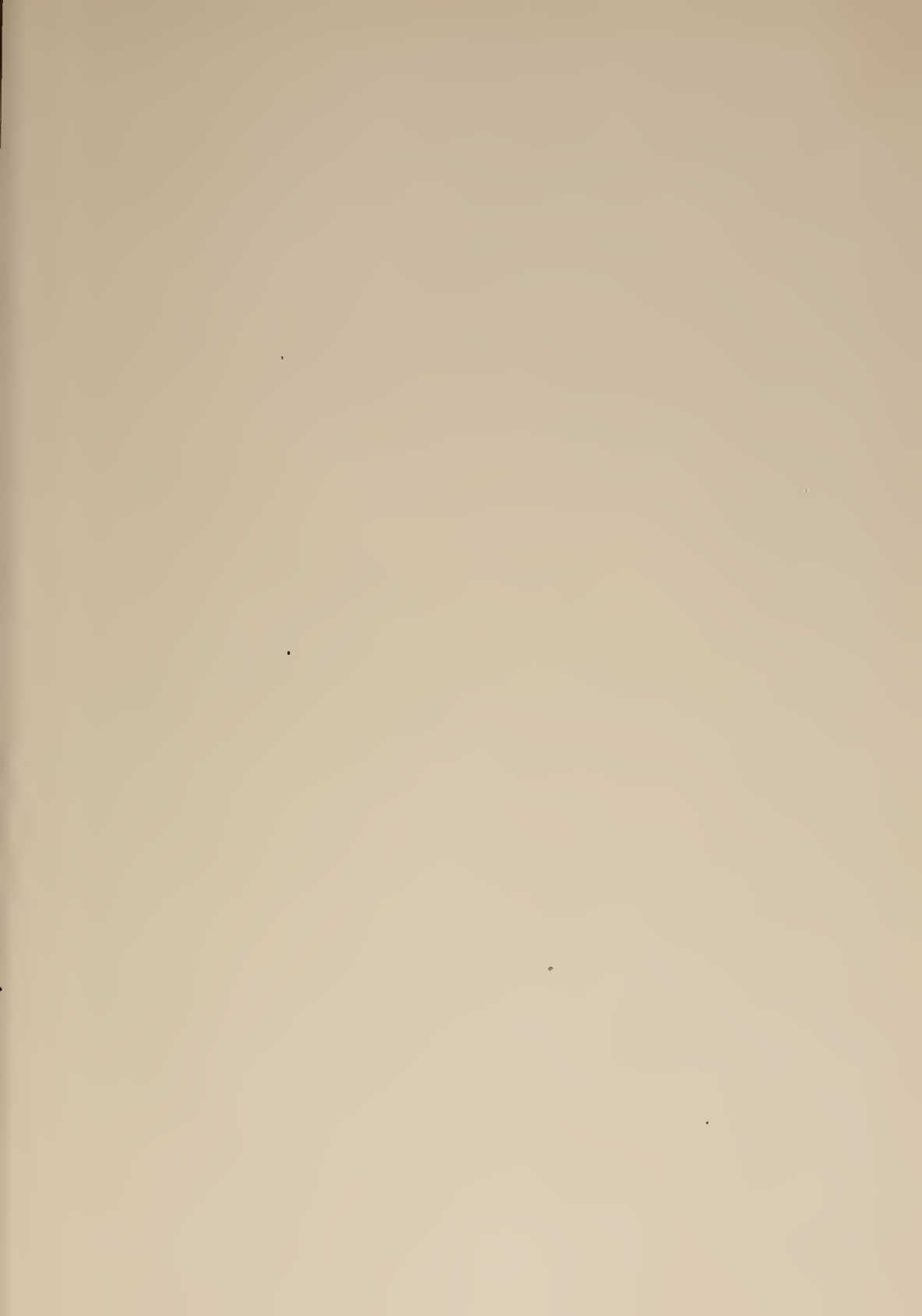
Pterosiphonia bipinnata (P. et R.) Fkgb.

Nom. Jap.: *Ito-yanagi*.

PL. CLXXXV, Fig. 1-7.

Pterosiphonia bipinnata Fkgb. Rhod. p. 273; Setch. and Gardn. Alg. of northwest. Amer. p. 328; De Toni Syll. IV, p. 997.—*Polysiphonia bipinnata* Post. et Rupr. Illustr. p. 22.—*Polyostea gemmifera* Rupr. Tange Ochot. Meer. p. 226, t. 11.

Fronds filiform, caespitose, soft, setaceous, 5-15 cm. high, erect, thoroughly ecorticated from the base, distinctly branched below in subdichotomopinnate manner and pinnately branched upward. Branches 2-3 times pinnate; in contracted upper portions of branches the arrangement of pinnae is more corymbose (fig. 3), while in elongated ones pinnae alternate on slightly flexuose rachis (fig. 2). Pinnules bend inward at the beginning, afterward becoming turned outward and patent; the apex of pinnae is almost level-topped with young pinnellae alternately arising from the inside of preceding ones. Pinnae and pinnulae stand on every third articulation, and end in an acute apex from broader base. Articulations in primary filament are shorter below, in the middle portion 3-5 times long as diameter, gradually diminishing in length upward, in upper branches becoming a little longer or shorter than the diameter. Axis is more or less torted with 13-14 pericentral cells. *Tetraspores* seriated in a longitudinal row in upper pinnae which are





Pterosiphonia bipinnata (P. et R.) Falkenb. いとやなぎ Fig. 1-7.
Pterosiphonia artica (J. Ag.) Setch and Gardn. いなぼぐさ Fig. 8-16.

not changed in form. *Cystocarps* unknown. *Colour* dark brownish and almost black in dried state. *Substance* membranaceous and the plant imperfectly adheres to paper in drying.

Hab.: Chishima (Kurile Isls.)

Pl. CLXXXV, Fig. 1-7. Fig. 1: frond of *Pterosiphonia bipinnata* (P. et R.) Fkbg., $\frac{1}{1}$.—Fig. 2: terminal portion of branch, showing alternate arrangement of pinnae, $\frac{8.3}{1}$.—Fig. 3: contracted terminal branches, $\frac{1.6}{1}$.—Fig. 4: growing point of branch; *a*, apical cell; *b*, *b'*, *b''*, apices of lateral branches, $\frac{3.5.3}{1}$.—Fig. 5: cross-section of branch; compressed one is that of upper branch; cylindrical one, lower, $\frac{5.0}{1}$.—Fig. 6: longitudinal section of branch, $\frac{1.6}{1}$.—Fig. 7: branch bearing tetraspores, $\frac{4.8}{1}$.

***Pterosiphonia arctica* (J. Ag.) Setch. and Gardn.**

PL. CLXXXV, Fig. 8-16.

Nom. Jap.: *Inabo-gusa*.

Pterosiphonia arctica (J. Ag.) Setch. and Gardn. Alg. north-west. Amer. p. 329.—*Polysiphonia arctica* J. Ag. Sp. II, p. 1034; Kjellm. Alg. Arct. Sea p. 123.

Only two ill-prepared specimens now before us. *Fronds* filiform, soft setaceous, complanated above, erect (?), dichotomo-pinnately branched below, subfastigiately approximated above in subcorymbose manner. Ramuli arise alternately at acute angles on slightly flexuose elongated rachis, short, distichous, ending in an acute apices from broader bases. Branches and ramuli are slightly united at base and stand intercepting mostly two articulations. On the dorsal side of branches and branchlets near their apical cells very short, almost rudimentary hairs are provided

(fig. 10 and 12). Often root-fibres are emitted from the apices of stunted or harmed ends of ramuli. Pericentral cells are 6 in ours and thoroughly ecorticated. Articulations 6 times long as diameter in main filaments (cells in that portion measure 2.3 mm. in length and 220-250 μ in thickness), gradually becoming shorter above, in upper ramuli becoming subequal to or shorter than the diameter. *Tetraspores* seriated in a longitudinal row in upper unaltered ramuli. *Cystocarps* unknown. *Colour* darkish-brown in dried state. *Substance* soft and the plant imperfectly adheres to paper in drying.

Hab.: Myedoni Isl. in Komandorski IIs.

Setchell and Gardner remark that *Pterosiphonia arctica* has no hair, but in ours it is provided though rather rudimentary. The presence of hairs in *Pterosiphonia*, contrary to Falkenberg's statement, has already been shown in *Pterosiphonia-fibrillosa* Okm. Icones Vol. II, p. 172-176, Pl XCVIII, 1912.

PL. CLXXXV, Fig. 8-16. Fig. 8: portion of frond of *Pter. arctica* (J. Ag.) Setch. and Gardn., $\frac{1}{1}$.—Fig. 9: upper portion of branch, $\frac{16}{1}$.—Fig. 10: apical portion of branch; *a*, apical cell of branch; *b*, that of ramulus; *h, h*, hairs, $\frac{353}{1}$.—Fig. 11: root-fibre produced from stunted ramuli, $\frac{83}{1}$.—Fig. 12: ramulus and dorsal hair, *h*, $\frac{152}{1}$.—Fig. 13: cross-section of branch, $\frac{83}{1}$.—Fig. 14: articulation of primary filament, $\frac{34}{1}$.—Fig. 15: portion of branch bearing tetraspores, $\frac{34}{1}$.—Fig. 16: ramuli bearing tetraspores, $\frac{34}{1}$.

Pikea Harvey 1852.

みちがへさう屬.

DUMONTIACEAE. りうちんさう科.

體ハ扁壓ニシテ兩縁ニ薄ク、兩縁ヨリ長短不同ノ枝ヲ發シ枝ハ體ノ上部ノ方ニ進ムニ從テ長大ナトル。髓層ハ可ナリ厚ク、長キ絲ノ如キ細胞ヲ以テ密ニ埋マリ、輪狀ニ分岐セル太キ中軸ト外方ニ斜ニ關節セル太キ皮層絲トヲ有シ中軸ハ可ナリ太キ細胞ヨリ成ル；皮部ハ薄ク内方ニハ大ナル細胞ヨリ成リテ稍弛緩シ外方ニハ小サキ細胞ヨリ成リテ密ナリ；成長點ハ横ニ關節ス。——四分孢子ハ不明。胎原列及助細胞列ハ皮部ノ内層ノ一部ニ生ジ其部ノ甚シク弛緩シタル所ニ極メテ多數ニ形成セラレ、同時ニ胎原列若クハ助細胞列ト同様ノ形狀ヲナセル中性ノ細胞列ヲ伴ナフ；此細胞列ハ後生的ニ生ズルモノニシテ蠕虫狀ニ屈曲シ、短シ。囊果ハ上部ノ枝ノ髓層ト皮層トノ間ニ多數ニ密集シ、其部ノ厚クナラザル中央線ニ沿フテ其兩側ノ皮部ヲ外方ニ隆起セシム、故ニ實ヲ熟シタル部分ハ中央線ノ兩側ニ瘤々ノ如キ狀ヲ呈ス；仁ハ球狀—腎臟形又ハ卵形ニシテ可ナリ大ナル分岐セル柄ヲ有シ多數ノ密ニ分岐セル胞子絲ノ密集セルモノヨリ成ル。

北米ノ西岸ニ唯一種アルノミ即チ下記ノモノ是ナリ。——
屬名ハ Nicolao Pike 氏ノ名ニ因ム。

Pikea californica Harv.

みちがへさう¹⁾ 岡村稱。

第 CLXXXI 圖版, 1-6 圖。

體ハ一ノ盤狀根ヨリ叢生シ、扁壓ニシテ兩縁ニ薄ク、幅 1-1.5

1) 和名ハ往々てんぐさト見擬フヨリ名ヅク。

PL. CLXXXI—CLXXXV, Sept. 1921.

mm. アリ,下部太キ圓柱狀ヲナシ,主幹ナク,多數ノ主枝ニ分レ,主枝ハ稍叉狀様羽狀ニ分岐シ,體ノ高サハ5-10 cm.ニ達ス.各部ノ枝ハ廣開シ,兩緣ヨリ不規則ニ出デ,互生シ,對生シ,或ハ相接近シテ出デ,或ハ偏在シ,長短混在シテ規律ナク,單條又ハ分岐セル刺狀ノ小枝ヲ存ス. 中軸ハ太キ細胞ヨリ成リ枝ヲ輪生ス;此輪生セル枝ノ中兩緣ノ方ニ出ルモノハ側枝ノ中軸トナレドモ枝ノ表面ノ方ニ出ルモノハ其マヽニシテ枝ノ中軸トナルコトナシ. 軸ノ細胞ヨリ皮層ヲ形成スル細胞列ヲ出シ,軸ト皮層ノ下部ノ細胞トヨリ多數ニ發出スル根様絲ヲ以テ體ノ內腔ヲ埋ム. 成長點細胞ハ水平ニ關節ス.—囊果及四分胞子ハ不明. 色ハ美シキ紫紅色ナリ. 質ハ軟キ軟骨質ニシテ紙ニ附着スルコト充分ナラズ.

產地:深所ニアリ(常陸大津7尋),上總大東崎ヨリ陸前ニ至ル間ニ在リテ磐城小名濱邊ガ或ハ分布ノ中心點ニハアラザルカ. 大東崎,銚子,磐城,常陸,陸前松島,長渡,深沼.

分布:北米西岸.

第 CLXXXI 圖版. 1-6 圖. 1: *Pikea californica* Harv., みちがへさう,ノ實ナキ體; $\frac{1}{1}$.—2:體ノ成長點, $\frac{5.67}{1}$.—3:枝ノ横斷面, $\frac{3.4}{1}$.—4:横斷面ノ一部, $\frac{3.53}{1}$.—5:中軸ト其枝トヲ通シテ體ノ表面ニ並行シテ斷リタル斷面, $\frac{1.52}{1}$.—6:同上ノ一部ニシテ根様細胞ト軸ノ細胞ヨリ皮層ヲ形成スル狀トヲ示ス, $\frac{3.53}{1}$.

Gymnogongrus Martius 1833.

おきつのり屬.

GIGARTINACEAE すぎのり科.

體ハ圓柱狀,扁壓又ハ扁平,數回叉狀ニ分岐シ且往々多少密ニ兩緣ヨリ分岐ス(多クハ副枝ヲ生ジテ),細胞組織ニテ成ル. 內部ノ組織(即チ髓ト皮下層)ハ大ナル細胞ノ密ニ結合セルモノ

ヨリ成リ、皮層ハ小細胞列ノ表面ニ直角ニ列セルモノヨリ成ル；
髓ト皮下層トハ時ニ或ハ唯僅ニ細胞ノ形狀ト大サトニテ區別
スベシ；粘質ハ堅クシテ殆ド角質ノ如シ。成長端ハ扇狀ニ射
出セル絲狀ノ細胞列ヨリ成ル。四分孢子ハ未詳。胎原列ハ體ノ
上部ノ枝ニ於テ扁キ疣ノ如クナリテ外皮ノ増厚セル部分ノ皮
下ノ組織ノ少シク緩クナリタル所ニ集リ生ズ。囊果ハ體ノ表
面ニ散在シ、一方ノ面又ハ兩面ニ隆起ス。仁ハ多少澤山ニ根樣
絲ヲ以テ錯綜シ、時トシテハ根樣絲ナク、大ニシテ擴ガリタル細
胞ノ網ヲ作リテ其網目々々ニ成胞絲ノ枝ヲ分岐シ其網ヲ形成
スル體細胞ト連絡點ヲ作リテ連絡シ以テ多數ノ孢子ヲ形成ス。
果皮ニハ狭キ果孔ヲ開ク。

約40種諸所ノ海ニ産ス。下ニ示スモノハ本邦ノ模範種ト
ナスベシ。本屬ノ植物ニハ未ダ四分孢子ヲ知ラズ。或種ハ往
々 *Actinococcus* ト稱スル寄生紅藻ヲ存スルコトアリテ從來ハ
之ヲ本屬ノ「ネマセシア」ナリト記載シタリ。本屬中ノ種類ハ
精細ノ研究ノ後ニハ他屬ニ屬スルモノアルベシ。一屬ノ名ハ
gymnos (裸) ト *goggros* (成長スル) トヨリ成ル。從來本屬ノ和名ヲ
さいみ屬トシタレドモさいみハ *Ahnfeltia* 屬ノモノナルヲ以テ
今おきつのり屬ト改ム。

Gymnogongrus flabelliformis Harv.

おきつのり。

第CLXXXI圖版1-9圖；第CLXXXII圖版9-14圖。

體ハ塊狀根ヨリ叢生シ、細線狀、扁平、數回正シク叉狀ニ分岐シ
テ扇狀ヲナシ、枝皆直立シ、密ニ相接近シテ分岐シ、枝ハ直立—廣
開シ、腋圓ク、體ノ高サ4-8 cm.ニ達ス。各部ハ通常線狀ニシテ同一
ノ幅ヲ有シ或ハ分岐點ノ方ニ少シク楔形ヲナシ、幅1-1.5 mm.ア
リ、然レドモ時ニハ甚シク細クシテ殆ド絲狀ナルコトアリ；縁



邊ニ副枝アリ又ハ之ヲ缺ク;副枝ハ單條又ハ一回乃至2-3回分岐ス. 分岐點ハ通常相接近スレドモ時ニ遠ク距ルコトアリ. 枝端ハ直立シ,分岐シ,鈍圓又ハ尖リ,時トシテハ僅ニ開張シ,淺ク凹ミ又ハ二裂ス.一囊果ハ末位及其次位ノ部分ニ3-4個一列ニ連ナリテ生ジ,枝ノ兩方ノ面ニ隆起ス. 色ハ葡萄酒様紅色ニシテ乾燥スルトキハ殆ド黑色トナル. 質ハ軟骨質ニシテ乾燥スルトキハ體ハ紙ニ附着セズ.

產地:高潮線ニ近ク岩石ニ生ズ. 九州ヨリ函館附近ニ至ル兩沿岸ニ普通ナリ;釜山.

本種ハ古ヨリオきつのり又おきちのりト稱シ所ニヨリ糊料トス.

第CLXXXI圖版, 7-9圖. 7: *Gymnogongrus flabelliformis* Harv., おきつのり, ノ囊果アル體, $\frac{1}{1}$.—8: 別ノモノノ一部, $\frac{1}{1}$.—9: 遠ク距リテ分岐セル體; $\frac{1}{1}$.

第CLXXXII圖版, 9-14圖. 9: 枝ノ頂端, $\frac{7}{1}$.—10: 枝ノ横斷面, $\frac{22}{1}$.—11: 横斷面ノ一部, $\frac{220}{1}$.—12: 囊果アル枝, $\frac{7}{1}$.—13: 囊果ノ裏面, $\frac{48}{1}$.—14: 仁ノ一部, $\frac{220}{1}$.

Phyllophora Grev. 1830.

まさごしばり屬.

GIGARTINACEAE. すぎのり科.

體ハ下部莖狀ヲナシ上部扁平或ハ葉狀ナリ;扁平部ハ分裂セズ又ハ慨ネ叉狀ニ分岐シ往々縁邊又ハ表面ヨリ副枝ヲ出シ,時ニ中肋ヲ存ス. 體ハ細胞組織ヲ以テ成リ,内部ノ組織ハ大ナル細胞ノ密ニ結合セル髓ニシテ,外部ハ小キ細胞列ノ體ノ表面ニ直角ニ列ナレル皮層ナリ;髓ト皮層トハ細胞ノ大サト形狀トニテ之ヲ區別スベシ;粘質ハ僅ニ存シ頗ル強韌ナリ. 成長端ハ扇狀ニ射出セル絲狀ノ細胞列ヨリ成ル.—四分胞子ハ十字様

ニ分裂シ、扁キ疣狀ノ「ネマセシア」ヲナシテ多數ニ集リ、葉ノ兩面ニ多少擴ガリ、或ハ特ニ四分胞子ヲ有スル扁キ部分ノ基部ノ莖ノ如ク成レル所ノ周圍ニ集リ生ズ；而シテ「ネマセシア」ヲ形成セル總テノ細胞列ノ絲ノ上部ノ關節ハ四分胞子トナリテ恰モ念珠ヲ見ルガ如キ觀ヲ呈ス。胎原列ハ實ヲ生ズル特別ノ小ナル枝ニ概ネ多數ニ形成セラレ、其枝ハ體ノ緣邊又ハ表面ヨリ出ヅ。仁ハ之ヲ圍繞スル絲組織ナク、實ヲ生ズル特別ノ枝ニ概ネ一個形成セラル。此故ニ囊果ハ短キ柄ヲ有シテ體ノ外部ニ座シ（緣邊又ハ表面ニ）、厚キ壁ヲ有シ、往々瘤々ノ疣ヲナス。果皮ハ其部ノ皮層ノ厚クナリタルモノニシテ概ネ數多ノ後生的果孔ヲ開ク。

約 10 種アリテ、多クハ太西洋ノ北部ニ分布ス。此屬ニ *Coccolytus*, *Phyllophora* 及 *Phyllotylus* ノ三亞屬アリ、寧ロ夫々別屬ニ別ル、モノニハアラザルカトノ說アリ。從來四分胞子及囊果ハ多數ノ種ニ於テ充分明ナラズ。一屬ノ名ハ *Phyllon* (葉) ト *phoreo* (持ツ) トヨリ成ル。

Phyllophora intricata Okam. 新種.

まさごしばり。岡村稱。

第 CLXXXII 圖版, 1-8 圖。

體ハ錯綜シ、匍匐スル部分ヨリ小サキ盤狀根ヲ以テ地盤ニ附着シ、其部ヨリ直立シ、扁平、不規則ニ叉狀ニ分岐シ、短莖アリ又ハ之ヲ欠キ、5-7 cm. 高シ。體形ハ變化シ易ク、概ネ叉狀ナレドモ或ハ稍羽狀ニ近キ分岐ヲナセルモノナドアリ、各部ハ圓キ腋ヲ以テ廣開ス。枝ハ互ニ接觸スル所ニ於テ或ハ盤狀根ヲ作り、或ハ單ニ癒合シテ結合ス；又往々枝端ニ盤狀根ヲ作りテ地盤ニ附着シ且ツ其緣邊並ニ表面ヨリ絲狀又ハ多少廣クシテ柄アル枝ヲ副出シ此モノ更ニ上記ノ方法ニテ一層錯雜ナラシ

ム。各部ノ幅ハ 2-5. mm. ニシテ廣キ線狀アリ時ニ葉狀ナルアリ其極端ノモノハ殆ド絲狀ナリ(6圖)。枝端ハ鈍圓、筵狀、舌狀、二裂シ又ハ尖レリ。四分孢子及囊果ハ不明。色ハ紫紅色。質ハ膜質ニシテ強韌、乾燥スルトキハ紙ニ附着セズ。

產地：相模江ノ島、磐城、越後能生。

遠藤氏ハ氏ノ Notes on Algae new to Japan IV ニ Phyl. palmettoides J. Ag ヲ舉ゲタリ、其產地ヨリ見ルニ多分本種ニ外ナラザルガ如シ。本種ハ其種トハ異ニシテ匍匐錯綜シ、該種ハ莖ヲ以テ各個直立ス；此性質ニヨリテ今新種トス。

第 CLXXXII 圖版, 1-8 圖。1-3: *Phyllophora intricata* Okam. まさごしばり、ノ種々ノ形態(江ノ島産), $\frac{1}{2}$ 。—4-5: 同上、磐城産, $\frac{1}{2}$ 。—6: 細キ枝ヲ有スルモノ(江ノ島産); *b* ヨリ右ノ方ニ枝多ケレドモ圖ニ示サズ, $\frac{1}{2}$ 。—7: 枝ノ癒合スル狀, $\frac{3\frac{1}{2}}{1}$ 。—8: 體ノ横斷面, $\frac{3\frac{5}{8}}{1}$ 。 *r*, 盤狀根; *a*, 癒着部。

Euptilota Kützinger 1847.

いそしのぶ屬。

CERAMIACEAE. いぎす科。

體ハ直立シ、極メテ繁ク一平面ニ分岐ス；體ハ扁平ニシテ兩縁ニ薄ク、下部又ハ殆ド頂端マデ多少厚ク根様細胞ヲ以テ蔽ハレ或ハ上ヨリ下マデ普通ノ皮層細胞ヲ以テ多少厚ク蔽ハル；無限成長ノ枝ハ羽狀ノ有限成長ノ枝ヲ互生ス、其有限枝ハ單條カ又ハ互生ニ羽狀ニ切レタルカ若クハ互生ノ羽枝ヲ有シ(單性又ハ複性)、其中或ハ無限枝トナリテ伸長スルモノアリ；無限枝ノ頂細胞ハ交互セル斜面ノ分裂面ヲ以テ關節ス。—四分孢子ハ體ノ上部ニ散在シ又ハ團集シ、短キ皮層ナキ關節セル柄ノ頂端ニ存シ、柄ハ一個一個カ又ハ集リテ互ニ接近シ、或ハ分岐セル小サキ叢ヲナシ、有限成長ノ羽枝ノ縁邊(即チ上側)ヨリ生

ズ。精子器(從來知レル所ニテ)ハ小サキ密集セル小枝ノ叢ニシテ有限ノ羽枝ノ縁邊ニ生ズ。胎原列ハ枝ノ頂端ニ近キ有限ノ羽枝ノ短キ小羽枝若クハ羽狀齒(時トシテハ稍大キクナリタル)ニ形成セラレ、通常ノ側枝(ニ近ク或ハ)ノ下ニ於テ實ヲ有スベキ關節ノ側面ニ生ズ。囊果ハ短キ小羽枝ノ頂端ニ形成セラレ、時トシテハ外觀上小羽枝ノ側面ニ坐シ、多少澤山ノ後生的ニ生ジタル苞枝ヲ以テ圍マル。

南方ノ海ニ産シ約6種アリ。—屬名ハEu(善キ)ト Ptilota(屬名 ptilotos 羽狀ヨリ成ル)トヨリ成ル。

Euptilota articulata (J. Ag.) Schm.

いそしのぶ。岡村稱。

第CLXXXIII圖版, 1-9圖。

體ハ絲狀、扁壓、兩縁ニ薄ク、下部稍圓柱狀、密ニ羽狀ニ互生シ、枝ハ廣開ス、高サ5-10 cm.アリ。主枝ノ基部又ハ下半部ハ時トシテハ充分成長セルモノニ於テ裸出シ、其他ノ部ハ正シク長キ又ハ短キ羽枝ヲ存シ羽枝ハ互ニ近ク互生ス。枝(2圖)ノ上部ハ稍正方形又ハ五角形ノ細胞ヲ以テ雁木狀ニ關節シ、下部ハ多少根様細胞ヲ以テ蔽ハル而シテ根様細胞ハ羽枝ノ基部ノ細胞ヨリ起ル。皮層ハ下部ホド厚ク成リ、枝ノ太キ部分ニテハ中軸ハ縱走セル根様細胞ヲ以テ厚ク蔽ハレ、枝ノ表面ハ絲狀ノ皮層細胞ヲ呈ス。小羽枝ハ全部關節シ、羽枝ノ各關節ヨリ互生シ、最末ノ小羽枝モ亦同様ノ排列ヲナス。成長スルニ從テ羽枝ハ伸ビテ枝トナリ、小羽枝ハ順次ニ羽枝トナル。關節ノ長サハ全部略ボ其直徑ト同ジク或ハ稍長シ。四分孢子ハ最小羽枝ニ生ジ、無柄ニシテ三角錐形ニ分裂ス。囊果ハ不明。色ハ淡紅色ナリ。質ハ膜質ニシテ體ハ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：阿波出羽島，紀州串本，志摩和具。

分布：タスマニア及ニウホルランド。

第 CLXXXIII 圖版，1-9 圖。 1: *Euptilota articulata* (J. Ag.) Schm., いそしのぶ，ノ體， $\frac{1}{1}$ 。—2: 枝ノ上部ニシテ羽枝ノ配置ヲ示ス； a 成長點， $\frac{8.8}{1}$ 。—3: 第2圖ノ頂部ニシテ羽枝ノ排置ト其基部ノ細胞ヨリ根様細胞ノ起ル狀トヲ示ス； a ，成長點， $\frac{15.2}{1}$ 。—4: 羽枝ノ基部ノ横斷面， $\frac{2.20}{1}$ 。—5: 莖ノ上部ノ横斷面， $\frac{4.8}{1}$ 。—6: 莖ノ下部ノ横斷面， $\frac{10.5}{1}$ 。—7: 第6圖ニ示シタル莖ノ縦斷面， $\frac{10.5}{1}$ 。—8: 莖ノ表面；斜ニ走レル細胞ハ枝ノ基部ヨリ來レルモノナリ， $\frac{15.2}{1}$ 。—9: 四分胞子ノ最末羽枝ニ生ゼル狀， $\frac{2.20}{1}$ 。

*Asparagopsis*¹⁾ *hamifera* (Hariot) Okam.

かぎのり。岡村稱。

第 CLXXXIII 圖版，10-12 圖；第 CLXXXIV 圖版，10-16 圖。

體ハ他ノ海藻ニ纏絡シ，絲狀又ハ稍太キ圓柱狀ノ莖若クハ主枝ヲ存シ，3-4回羽狀ニ分岐シ，10-15-cm. 高シ。枝ハ互生シ，廣開シ，各方面ニ出デテピラミツド形ヲナス。枝ハ密ニ毛ノ如キ短キ小枝ヲ以テ蔽ハル。春季ハ小枝極メテ多クシテ枝ハ筆頭狀ヲナセドモ，漸ク其數ヲ減ジ小枝ハ稍粗硬トナリ幾分櫛ノ齒ヲ見ルガ如クナルニ到ル。或枝ハ全ク小枝ナクシテ頂端ノ方ニ膨レ屈曲シテ鈎狀ヲナシ之ヲ以テ枝ハ互ニ卷絡ス。小枝ハ對生ニシテ不規則ニ交互シ（對生ノ枝交互ニ正シク直角ニ交ルニハアラズ），主枝及ビ次位ノ枝モ亦原來之ト同様ニ配列ス，然レドモ對生セル片方ノ枝交互ニ其發育ヲ停メ伸長セザルヲ以テ枝ハ互生ノ觀ヲ呈ス。實ヲ熟セザル體ニテハ小枝ハ互生ナレドモ，實アルモノニテハ生殖器ハ其一對ノ片方ノ枝ニ形成セラル。—四分胞子ハ不明。精子器ハ長橢圓形ニシテ短柄ヲ有ス。

1) *Asparagopsis* 屬ノ性質ハ第一卷 136 頁ニ在リ。

囊果ハ卵圓形又ハ球狀ニシテ短柄アリ。色ハ紫紅色ニシテ往々黃色トナル。質ハ軟クシテ體ハ乾燥スルトキハ紙ニ密着ス。

產地：潮線間及潮線下ノ種々ノ海藻ニ卷絡ス。阿波伊島、紀州椒村地ノ島(6尋)、江ノ島、松輪(相)、常陸、松島、岩井岬、小友、汐首、函館。果實：六一七月。

分布：米國ワシントン州、ホヰドベール島、ビクトリア、英國。

本植物ハ從來 *Bonnemaisonia* ト稱シ來リタレドモ然ラズ；其圓柱狀ノ枝アルコト、筆頭狀ノ小枝アルコト及體ノ構造等一々 *Asparagopsis* ノ性質ヲ有ス；故ニ予ハ今之ヲ改ム。本種ハ曩ニ英國ニ發見セラレタルヨリ本邦ノ船之ヲ彼ノ國ニ齎シタルモノナリト一般ニ信ジラレタレドモ其後廣ク英國內ニ分布スルコト明カナルニ到レルヨリ Cotton 氏ハ *Clare Island Survey*, 1912, p. 136. ニ之ヲ疑ヘリ。

第 CLXXXIII 圖版, 10-11 圖. 10: *Asparagopsis hamifera* (Hariot) Okam., かぎのりノ實アル體, $\frac{1}{1}$.—11: 囊果ヲ有スル枝, $\frac{1}{1}$.

第 CLXXXIV 圖版, 10-16 圖. 10: 枝ノ縱斷面(措葉品ヨリ), 廓大.—11: 枝ノ橫斷面(措葉品ヨリ), 廓大.—12: 主枝ノ成長點; a , $\frac{3.5}{1}$.—13: 小枝ノ頂端ニ近ク齒狀ノ突起アルモノ, $\frac{2.4}{1}$.—14: 精子器ヲ有スル枝, $\frac{1}{1}$.—15: 囊果, $\frac{3.4}{1}$.—16: 胞子, 廓大。

Chrysomenia J. Agardh 1842.

はなのえだ屬。

RHODYMENIACEAE. だるす科。

體ハ圓柱狀或ハ扁ク、所々又ハ全體ヲ通ジテ中空、時トシテ所々クピレテ關節シ、種々ニ分岐シ、時トシテハ聯基的分岐ノ爲メ外觀上繁ク枝ヲ生ジ、短キ囊狀ノ小枝ヲ存ス、細胞組織ニテ成ル：髓ハ枝ニテハ稍長キ、幅廣キ、時ニ或ハ稍狭キ細胞ヨリ成リ、中空ノ部分ニテハ其部ノ皮部ノ強盛ナル表面成長ノ爲

ニ早ク既ニ細胞ハ脱離シ其多クハ概ネ皮部ノ内側ニ往々腺ノ如キ小サキ細胞トナリテ永ク懸ル;皮部ノ内部ノ細胞ハ大ニ,外方ニハ小ニシテ中空ノ部分ニテハ内方ニハ極メテ密ニ結合セル體壁ヲ爲ス(時トシテハ其最内層ノモノハ甚ダ大ナル細胞ヨリ成ル);粘質ハ概ネ可ナリ強靱ナリ。四分孢子ハ體ノ表面ニ散在シ,十字様ニ分裂ス。囊果ハ散在シ,可ナリ大キク外部ニ隆起ス。果腔ハ仁ヲ圍メル組織ノ僅ニ殘存セルモノヲ以テ圍マレ或ハ全ク之ヲ欠ク。

約10-15種アリテ弘ク各地ノ暖海ニ在リ。一屬ノ名ハ chryseos (黄金色)ト hymen (膜)トヨリ成ル。

Chrysomenia Uvaria (L.) J. Ag.

はなのえだ。岡村稱。

第 CLXXXIV 圖版, 1-9 圖。

今唯一個ノ乾燥標品アルノミ。體ハ叉狀ニ分岐シ,細キ圓柱狀ノ莖ヲ有シ,太サ約1 mm. アリ。枝ハ廣開シ,雁木狀ニ屈曲シ,實質ニシテ,倒卵形ヲナセル囊狀ノ分岐セザル小枝ヲ存ス,小枝ハ短キ柄ヲ有シ,柄ト囊トニテ長サ1.5-3 mm. アリ。囊果及四分孢子ハ不明。色ハ紫色アル葡萄酒紅ナリ。質ハ膜質ニシテ莖ハ稍硬ク,體ハ乾燥スルトキハ可ナリ能ク紙ニ附着ス。

產地:種子ケ島(江川氏)。稀品ナリ。

分布:地中海及アドリアチック,チンギン,カナリー島,米國。

構造上ノ性質能ク Börgesen 氏(歐文欄文献參照)ノ圖說スル所ニ一致ス,故ニ極メテ稀品ナリト雖モ安全ニ本種ナリト斷定ス。

第 CLXXXIV 圖版, 1-9 圖。1: Chrysomenia Uvaria (L.) J. Ag., はなのえだ, ノ體, $\frac{1}{1}$ 。—2: 囊狀ノ小枝, $\frac{10}{1}$ 。—3: 幼キ囊狀小枝ノ横斷面

ニテ一個ノ腺細胞, $g, \frac{353}{1}$.—4: 幼キ囊狀小枝ノ表面, $\frac{353}{1}$.—5: 稍老成セル囊狀小枝ノ表面, $\frac{353}{1}$.—6: 囊狀小枝ノ内側ヨリ見たル内面: g, g , 腺細胞, $\frac{152}{1}$.—7: 莖ノ横斷面, $\frac{83}{1}$.—8: 同上ノ一部, $\frac{83}{1}$.—9: 莖ノ横斷面, $\frac{83}{1}$.

Pterosiphonia bipinnata (P. et R.) Fkbg.¹⁾

いとやなぎ. 岡村稱.

第 CLXXXV 圖版, 1-7 圖.

體ハ絲狀ニシテ叢生シ, 5-15 cm. 高ク, 直立シ, 全部皮層ヲ被ムルコトナク, 下部ハ稍叉狀様—羽狀ニ分岐シ上部ハ羽狀ニ分岐ス. 枝ハ 2-3 回羽狀ニ分レ上部ノ短縮セル枝ニテハ羽枝ハ繖房狀ニ列シ(3 圖), 長ク伸ビタル枝ニテハ羽枝ハ輕ク雁木狀ニ屈曲セル軸ノ上ニ互生ス(2 圖). 小羽枝ハ始メ内方ニ曲リ後外方ニ向キテ廣開ス. 羽枝ノ頂端ハ殆ド平坦ニシテ幼キ最小羽枝ハ其一回前ノ小羽枝ノ内側ヨリ互生ス. 羽枝及小羽枝ハ各第三番目ノ關節ヨリ出デ, 基部太クシテ頂端尖レリ. 主枝ノ關節ハ下部ニ於テハ短ク, 中央部ニテハ直徑ノ 3-5 倍長ク, 漸次上方ニ短クナリテ直徑ヨリ少シク長キカ又ハ稍短シ. 軸ハ多少ヨレテ周心細胞ハ 13-14 條アリ. 四分胞子ハ上部ノ羽枝ニ單縱列ヲナシ其羽枝ハ普通ノ羽枝ト異ナラズ. 囊果ハ不明. 色ハ暗褐色ニシテ乾燥スルトキハ稍黑色ヲ帶ブ. 質ハ膜質ニシテ體ハ乾燥スルトキハ紙ニ附着スルコト充分ナラズ.

產地: 樺太散江(北原), 海豹島(松尾, 久保) 得撫島(北原) 占守島, パラムシロ島, 厚岸小島(岡村).

分布: 北太平洋北部, カムサツカ, オホーツク.

第 CXXXV 圖版, 1-7 圖. 1: *Pterosiphonia bipinnata* (P. et R.) Fkbg.,

1) *Pterosiphonia*, はれぐさ屬ノ性質ハ第一卷 127 頁ニ在リ.



ノ體, $\frac{1}{1}$.—2: 枝ノ上部ニシテ羽枝ノ互生スル狀, $\frac{8.3}{1}$.—3: 枝ノ上部ノ短縮シタルモノ, $\frac{1.6}{1}$.—4: 枝ノ成長點; a , 成長點細胞; b, b', b'' , 側枝ノ頂細胞, $\frac{3.53}{1}$.—5: 枝ノ横斷面; 扁圓ノモノハ上部ノ枝; 圓キモノハ下部ノモノ, $\frac{5.0}{1}$.—6: 枝ノ縦斷面, $\frac{1.6}{1}$.—7: 四分孢子ヲ有スル枝, $\frac{4.3}{1}$.

Pterosiphonia arctica (J. Ag.) Setch. and Gardn.

いなぼぐさ. 岡村稱.

第 CLXXXV 圖版, 8-16 圖.

不注意ニ壓搾セラレタル唯二個ノ標品アルノミ. 體ハ絲狀, 毛髮ノ如ク, 上部扁壓シ, 直立(?), 下部叉狀様羽狀ニ分岐シ, 上部ハ枝直立シテ稍繖房狀ニ接近ス. 小枝ハ輕ク雁木狀ニ屈曲セル長ク伸ビタル軸ニ互生シ, 銳角ノ腋ヲ以テ立チ, 短クシテ枝ノ兩縁ニ出デ, 基部太クシテ頂端銳シ. 枝及小枝ハ基部ニ於テ僅ニ癒合シ概ネ二個ノ關節ヲ距テ、第三ノモノヨリ出ヅ. 枝及小枝ノ背面ヨリ其頂細胞ニ近ク甚ダ短キ毛ヲ生ジ, 毛ハ殆ド痕跡ノ如ク微ナリ (10 及 12 圖). 往々小枝ノイデケタル若クハ害ヲ被レル端ヨリ絲狀根ヲ出ス. 周心細胞ハ6條ニシテ體ハ全ク皮層細胞ヲ存セズ. 關節ハ主枝ニ於テハ直徑ノ6倍長ク (其部ニテハ細胞ハ長サ 2-3 mm. ニシテ太サ 220-250 μ . アリ), 漸次上方ニ短ク, 上部ノ小枝ニテハ直徑ト略ボ等ク或ハ稍短シ. 四分孢子ハ上部ノ小枝ニ一縦列ヲナシテ生ジ其小枝ハ別ニ形狀ヲ變化セズ. 囊果ハ不明. 色ハ乾燥品ニテハ暗褐色ナリ. 質ハ軟クシテ體ハ乾燥スルトキハ紙ニ着クコト充分ナラズ.

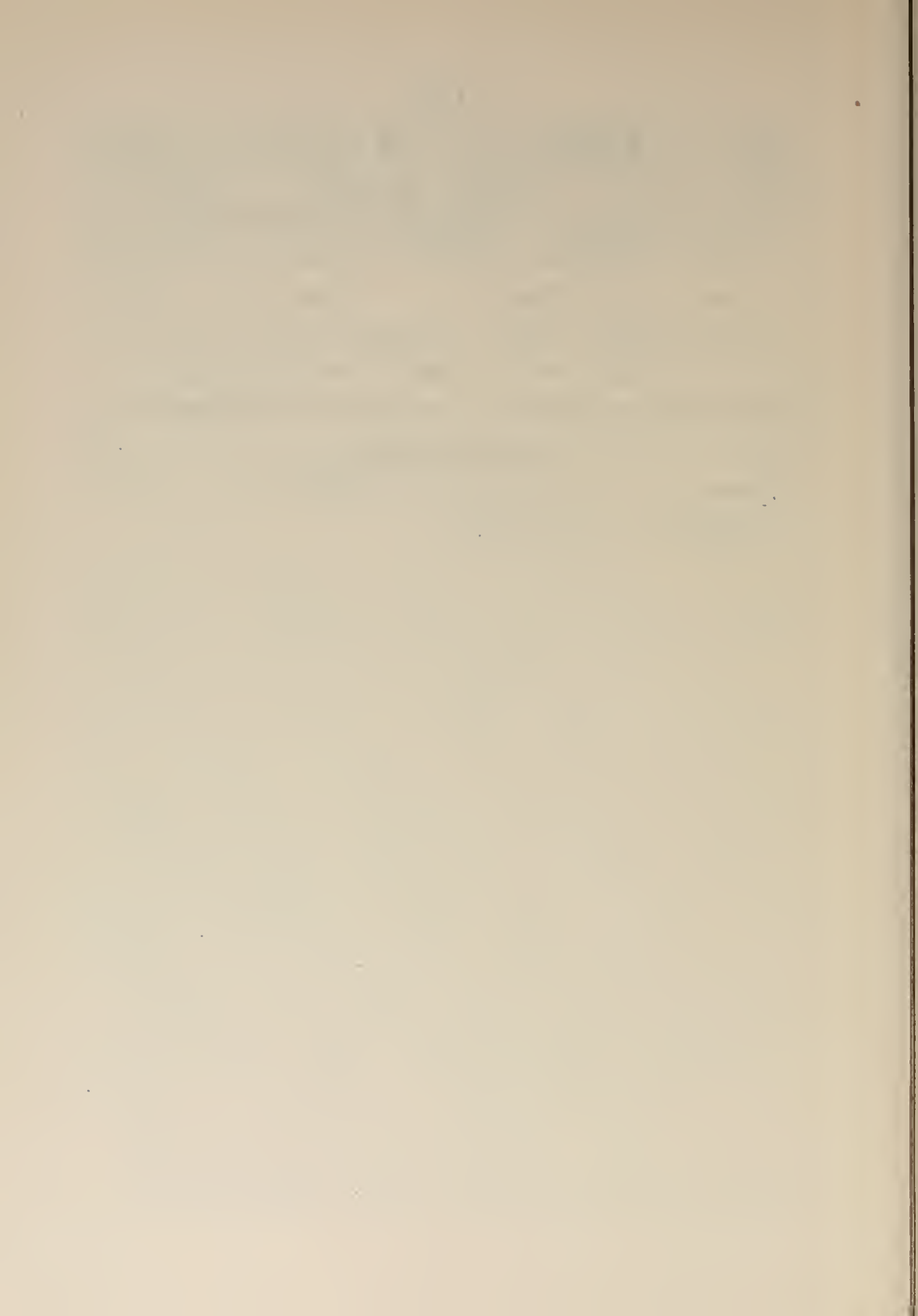
產地: コムマンドルスキー島中ミエドニ島.

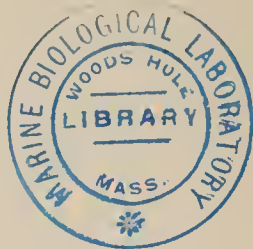
分布: 北氷洋, スピッツベルゲン, 北米.

Setchell and Gardner ハ本種ニハ毛ナシト記セリ, 然レトモ予

ノ標本ニテハ幾分痕跡ノ如シトハ雖モ明ニ之ヲ存ス；本屬ノ植物ニハ毛ナシトハ Falkenberg ノ云フ所ナレドモ其之アルコトハ既ニ予ノ *Pterosiphonia fibrillosa* (第二卷第 XCVIII 圖版) ニ圖說シタル所ナリ。周心細胞ハ7條ナリトアリ。本種ハ未ダ邦内ノ産アルヲ知ラズト雖モ將來之アルベシト思惟シテ茲ニ圖說ス。

第 CLXXXV 圖版, 8-16 圖. 8: *Pterosiphonia arctica* (J. Ag.) Setch. and Gardn. ノ體ノ一部, $\frac{1}{1}$.—9: 枝ノ上部, $\frac{16}{1}$.—10: 枝ノ成長點; a , 枝ノ成長點; b , 小枝ノ成長點; c , c , 毛; $\frac{353}{1}$.—11: イデケタル小枝ヨリ絲狀根ヲ生ズル狀, $\frac{83}{1}$.—12: 小枝及其背面ニ生ズル毛, c , $\frac{152}{1}$.—13: 枝ノ横斷面, $\frac{83}{1}$.—14: 主枝ノ關節, $\frac{34}{1}$.—15: 四分胞子ノ枝ノ一部, $\frac{34}{1}$.—16: 四分胞子ヲ有スル小枝, $\frac{34}{1}$.

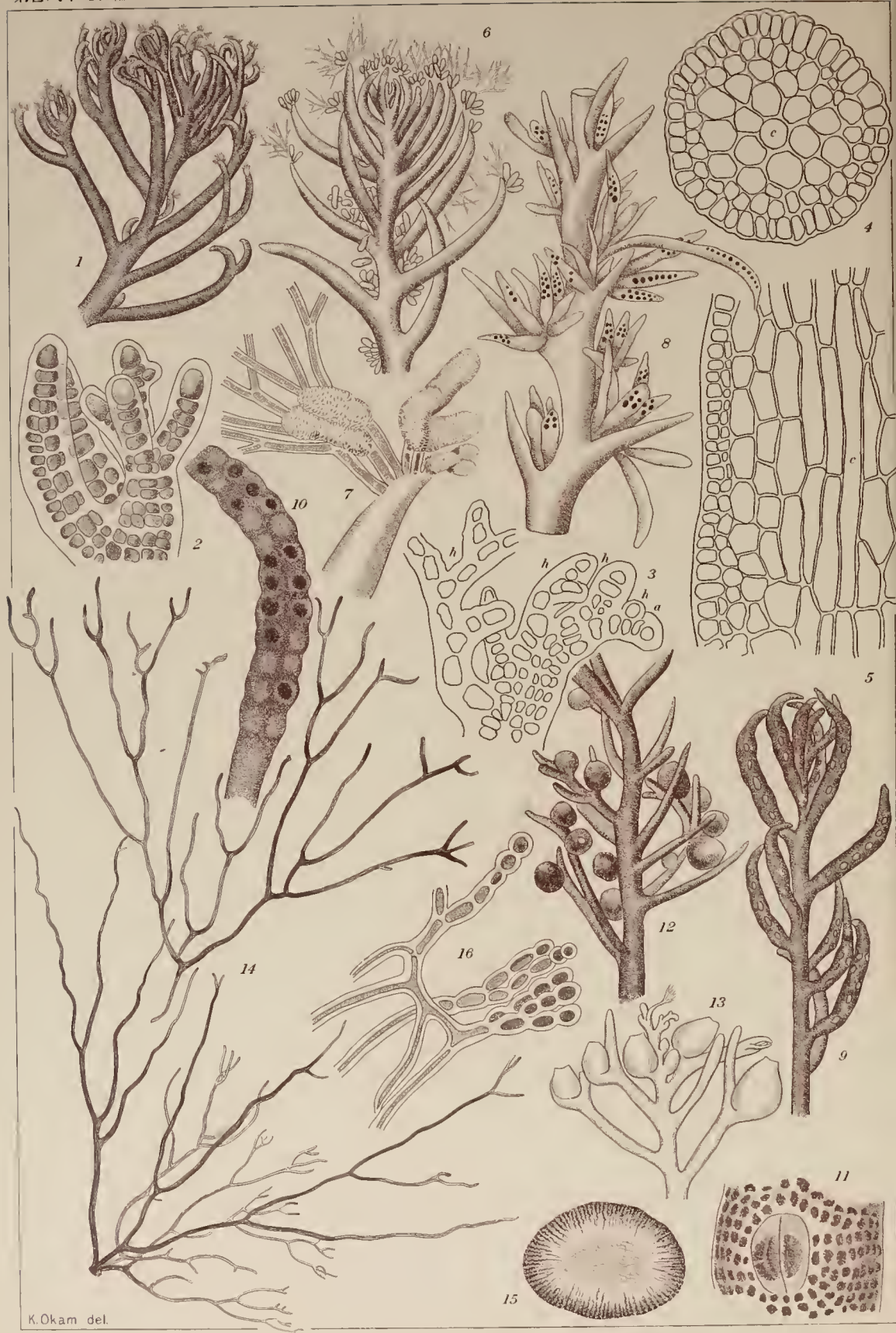






K Okam del

Rhodomela subfusca (Woodw.) Ag. いとふちまつ



K. Okam del.

Rhodomela subfusca (Woodw.) Ag. いとふぢまつ Fig. 1-13.
Nemalion multifidum (W. et M.) J. Ag. つくものり Fig. 14-16.

Rhodomela subfusca (Woodw.) C. Ag.

Nom. Jap.: *Ito-fujimatsu*.

PL. CLXXXVI; PL. CLXXXVII, Fig. 1-13.

Rhodomela subfusca (Woodw.) C. Ag. Sp. I, p. 378; J. Ag. Sp. Alg. II, p. 883; Harv. Phyc. Brit. tab. 264; Falkenb. Rhodom. p. 593, tab. XI, f. 2-17; Kjellm. Alg. Arct. Sea p. 113; Börgesen The Mar. Alg. of the Faeroes, 1902, p. 375; Hauck Meeresalg. p. 217, f. 94; Okam. Synop., 日本藻類名彙 (1st. edit.), p. 66.—*Fuscaria tenuissima* Rupr. Alg. Ochot. p. 221, tab. 10.—*Fucus subfuscus* Woodow., Turn. Fuci tab. 10.—*Rhodomela lycopodioides* (L.) Ag., Okam. Synop., 日本藻類名彙 (2nd. edit.), p. 81.

Many fronds rising from a common disc, 13-20 cm. high, 3-4 times pinnately branched in more or less regular manner from the lower portion of frond. Fronds are filiform, in some very slender, in others more thick, and in perennial older ones the lower portion of frond often becomes firm and stem-like (PL. CLXXXVI, fig. 1). Branches are patent, in some almost straight, in others slightly flexuose, the middle ones in general the longest and are more or less densely covered with ramuli. Ramuli simple or often furnished with few pinnate ramelli toward their apices; they are spirally arranged, subulate and incurved (fig. 2 and 4), in older ones often recurved (fig. 1). They are 10-12 mm. long in longer ones (fig. 2), 0.5-1 mm. in shorter ones (fig. 3).—*Tetraspores* are formed in ramuli which become toruloso-prominent in maturing (PL. CLXXXVII, fig. 9-10); in some fronds a small branch bearing tetrasporic ramuli becomes stunted appearing like fasciculately arising from the axil of a ramulus (fig. 8). *Antheridia* oblong, formed on

“Haarblättern” arising from the apices of ramuli. *Cystocarps* ovate provided with a wide ostiole, shortly stipitate on the side of ramuli. *Colour* dark or yellowish brown when fresh, turning to blackish in drying. *Substance* soft in younger part, becoming firmer in older portions and the plant imperfectly adheres to paper in drying.

Hab.: On rocks between tide-marks, rather near the high tide in the place where it is protected from the dashing of waves. Widely distributed within the boundaries from the Kurile to Kyushyu.

The specific determination of the species of *Rhodomela* is very difficult in *Rh. subfusca*, *virgata* and *lycopodioides*, and there are some confusions among them. To a certain extent I have followed Kjellman's definition of the species, and many forms are met with in our specimens differing in several minute characters chiefly according to their localities and they may be separated in other days into some numbers of varieties.

Plants illustrated in PL. CLXXXVI may be considered in some measures as the representatives of forms of the plant in this country. Of the two species of *Rhodomela* known in the boundaries the present plant has a wide range of distribution ranging from Shimushu to Kyushyu and as consequence there are many types of different forms. Fig. 4 represents the southern form and fig. 1, the northern; fig. 3 may be considered as weakly grown form as it is collected at Abashiri where the coast is washed by a terminal branch of the warm current pouring into the Ochotsk Sea. The form shown in fig. 2 which I have collected at Muroran in the summer has a very robust frond having a very different appearance.

PL. CLXXXVI. Fig. 1: plant from Shimushu Isl., bearing vernal shoots just growing from the hiemal frond, $\frac{1}{2}$.—Fig. 2: plant collected at Muroran in summer, 1915, $\frac{1}{2}$.—Fig. 3: plant from Abashiri in summer, 1915, $\frac{1}{2}$.—Fig. 4: summer form from Iwaizaki, $\frac{1}{2}$.





K Okam. del.

Rhodomela larix (Turn.) C. Ag. ふぢまつも Fig. 1-4.
Roschera glomerulata (C. Ag) Web. v. B. いとくづぐさ Fig. 5-10.

PL. CLXXXVII, Fig. 1-13. Fig. 1: terminal portion of a sterile branch showing the arrangement of ramuli and ramelli, $\frac{13}{1}$.—Fig. 2: growing apex of frond, $\frac{353}{1}$.—Fig. 3: apical portion of a ramulus situated near the apex of an axis, showing „Haarblättern“, *h*, and apical cell, *a*, $\frac{353}{1}$.—Fig. 4: cross-section of frond; *c*, central cell, $\frac{220}{1}$.—Fig. 5: longitudinal section of frond; *c*, central cell, $\frac{220}{1}$.—Fig. 6: terminal portion of branch bearing antheridia, $\frac{16}{1}$.—Fig. 7: antheridia, $\frac{83}{1}$.—Fig. 8: tetrasporic ramuli on stunted branchlets, slightly magd.—Fig. 9: tetrasporic ramuli on normal (not stunted) branch, $\frac{22}{1}$.—Fig. 10: tetraspores viewed from the side of a stichidium, $\frac{48}{1}$.—Fig. 11: tetraspore, showing cover-cells, $\frac{220}{1}$.—Fig. 12: branch bearing cystocarps, $\frac{13}{1}$.—Fig. 13: cystocarp, slightly magd. (Fig. 1, 3, 4-5, 11-12 drawn from alcoholic specimens from Onahama).

Nemalion multifidum (W. et M.) J. Ag.

Nom. Jap.: *Tsukumo-nori*.

PL. CLXXXVII, fig. 14-16.

Nemalion multifidum (W. et M.) J. Ag. Sp. Alg. II, p. 419; Id. Epicr. p. 508; Id. Florid. Morph. t. 29, f. 1; Harv. Phyc. Brit. t. 36; Kütz. Tab. Phyc. XVI, Tab. 61; Farlow Mar. Alg. New England p. 117, t. 12, f. 1; De Toni Syll. Alg. IV, p. 78.

Fronds filiform, weak, few from a small disc, worm-like, about 10 cm. high, 1 mm. thick, gradually tapering above, many times irregularly and somewhat divaricately dichotomous with round and broadly obtuse axils. Peripheral filaments moniliform with the lower articulations little longer than thick, gradually becoming larger and globular above, attaining ca. 120 μ in thickness in the uppermost joint. *Colour* dark brownish

red in dried specimens. *Substance* gelatinous and the plant firmly adheres to paper in drying.

Hab.: Prov.⁵ Awa in Shikoku. *Rare*.

PL. CLXXXVII, Fig. 14-16. Fig. 14: two fronds of *Nemalion multifidum* (W. et M.) J. Ag., $\frac{1}{1}$.—Fig. 15: cross-section of frond from herbarium-specimen, 0.8 mm. in diam., $\frac{15.2}{1}$.—Fig. 16: peripheral filaments and rhizoids, $\frac{35.3}{1}$.

Rhodomela Larix (Turn.) C. Ag.

Nom. Jap.: *Fujimatsumo*.

PL. CLXXXVIII, fig. 1-4.

Rhodomela Larix (Turn.) C. Ag.; Post. et Rupr. Illustr. p. 14, t. 38, f. h; Harv. Ner. Bor. Amer. II, p. 24; J. Ag. Sp. Alg. II, p. 886; Kjellm. Alg. Arct. Sea, p. 117; Falkenb. Rhodom. p. 600, t. XI, f. 1; Okam. Synop. (2nd ed.) p. 81; Okam. Alg. Jap. Exsic. no. 73; De Toni Syll. Alg. IV, p. 1131.—*Fuscaria Larix* Rupr. Alg. Ochot. p. 27.—*Lophura Larix* Kg. Sp. Alg. p. 850; Id. Tab. Phyc. XV, t. 39, f. a-c.—*Fucus Larix* Turn. Fuci IV, p. 24, tab. 207.

Fronds erect, coespitose rising from a callous disc with a cylindrical stem, 1-1.5 mm. thick, 15-25 cm. long, undivided, but beset from top to bottom with branches of the same nature and substance as itself, patent, disposed in an irregularly spiral alternate manner (some 10 cm., others scarcely 3-5 mm. long, the middle ones in general the longest), all like the stem beset with patent ramuli growing in small clusters with a very short interval between each cluster, simple, subulate, 2 or 3 mm. long, and scarcely thicker than hog's bristles. This clustered arrangement of the ramuli is more evident in the branches and toward the upper part

of the stem than near the base, where they grow rather solitary and are imbricated on all sides, but so loosely that the stem is everywhere seen through them.—*Stichidium* transformed from ramuli on shortened axis which grows from axil of a sterile ramulus, incurved and clustered, and half times as thin and as short as the sterile ramulus, cylindrical and filiform. *Colour* deep dark brown when recent, turning to almost black when dried. *Substance* cartilaginous, flexible and tough; in drying the plant scarcely changes its appearance and adheres though very slightly to paper.

Hab.: on rocks in open coast between tide-marks near high tide. From Kurile Isls. to Rikuzen.

Present plant grows on open coast where waves dash against. In a place where *Rhodomela subfusca* and *R. Larix* grow near to each other, the former prefers the sheltered sides, while the latter stands fronting the dash of waves.

PL. CLXXXVIII, fig. 1-4. Fig. 1: frond of *Rhodomela Larix* (Turn.) C. Ag., $\frac{1}{1}$.—Fig. 2: tetrasporic frond from Shimushu (6, May), $\frac{1}{1}$.—Fig. 3: terminal portion of branch bearing tetraspores, $\frac{16}{1}$.—Fig. 4: one of branchlets bearing stichidia shown in fig. 3, $\frac{48}{1}$.

***Roschera glomerulata* (C. Ag.) Web. v. Bosse.**

Nom. Jap.: *Itokudsu-gusa*.

PL. CLXXXVIII, Fig. 5-10.

Roschera glomerulata (C. Ag.) Web. v. Bos. Percy Sladen Trust Exp., Rhodophyceae, 1914 (Trans. Linn. Soc., Vol. XVI, 3) p. 289; Okam. Synop. (2nd. ed.) p. 77.—*Tolypiocladia glomerulata* (C. Ag.) Schmitz in Engl. u. Prantl nat. Pflanzenfam. p. 442; Falkenb. Rhodom



p. 177, t. 21, f. 2-7; De Toni Syll. Alg. IV, p. 964.—*Bostrychia?*
crassula Heydr. Algenf. v. Kais. Wilh. Land, p. 480, t. 26, f. 18-19.—
Polysiph. ? inflata Mart., Preus. Exped. n. Ost Asien p. 31, t. 7, f. 2.—
Polysiph. Calodictyon Harv., Kütz. Tab. Phyc. XIV, t. 46, f. a-c.—
Polysiph. calacantha Harv. Char. New Alg. p. 330.

Fronds entangled among other algae, erect, fine, filiform, laterally branched. "Langtriebe" surrounded through the whole length with spirally arranged, $\frac{1}{4}$ -alternately branched "Kurztriebe" or lateral branches which have the appearance of short stipitated star-shaped glomerules. Branches widely parted or almost horizontal. Star-shaped glomerules consist of short, thick, conical, divaricately branched polysiphonous horns which are further branching. Sometimes elongated, single-celled, hair-like root-fibres are emitted from the middle of the cluster of star-shaped horns, which attach the plant to other bodies occasionally forming disc-shaped expanded holdfast at the apex. Articulations subequal to the diameter or a little shorter. Filaments cylindrical or more or less quadratic in cross-section. *Colour* dark brownish red. *Substance* soft membranous and the plant does not firmly adhere to paper in drying.

Hab.: entangled on algae. Ryukyu, Ogasawarajima, Boshyu.

PL. CLXXXVIII, fig. 5-10. Fig. 5: frond of *Roschera glomerulata* (C. Ag.) Weber v. Bosse, $\frac{1}{1}$.—Fig. 6: branch, $\frac{16}{1}$.—Fig. 7: portion of branch magd., showing $\frac{1}{4}$ -alternate arrangement of "Kurztriebe," $\frac{83}{1}$.—Fig. 8: portion of branch bearing root-fibres, $\frac{48}{1}$.—Fig. 9: growing apex of frond, $\frac{353}{1}$.—Fig. 10: cross-section of frond, $\frac{48}{1}$.



K Okam del.

Antithamnion Plumula (Ellis) Thur. よつがさね

Antithamnion Plumula (Ellis) Thur.

Nom. Jap.: *Yotsu-gasane*.

PL. CLXXXIX.

Antithamnion Plumula (Ellis) Thur. in Le Jolis List Alg. Cherb. (1863) p. 112; Hauck Meeresalg. p. 71; Okam. Synopsis (2nd. edit.) p. 95.—De Toni Syll. Alg. IV, p. 1400.—*Conserva Plumula* Ellis; Dillw, Brit. Conf., 1809, t. L.—*Callithamnion Plumula, refractum*, and *polyacanthum* Kütz. Tab. Phyc. XI, t. 83-84.

Fronds fine, filiform (some ca. 150 μ thick in the middle portion), deliquescently branched in dichotomo-pinnate manner, furnished beneath the apex of every articulation with opposite or 4-verticillate, tetra-stichously arranged "Kurztriebe." "Kurztrieb" on its inner that is upper side carries laciniae arranged in a second manner, and are almost horizontal or refracted in older and lower ones, patent or widely parted above; laciniae simple or furnished with a few similarly arranged divaricated lacinulae. "Kurztriebe" distichously arising on the flank of rachis are decompound, while those alternating with them on the same articulation are more simple or sparingly branched. Apices of all sorts of branches are acute and sharp. Root fibres are transformed from "Kurztriebe" arising from lower articulations of frond. Articulations 2-6 times long as diam., becoming shorter and subequal toward the apex as well as the base of frond, cylindrical or slightly narrowed in the middle. On the sides of upper articulations of young laciniae or "Kurztriebe" gland-cells containing hyaline or yellowish mass are usually seen.—*Tetraspores* globular or oval, mostly cruciate, situated solitary or a few aggregated on the side of laciniae or lacinulae, mostly sessile, rarely shortly pedicellated. *Cystocarps* large, globular, with 2-3 nuclei aggregated

on the apex of upper branches and surrounded by "Kurztriebe." Colour rosy-red. Substance membranaceous and the plant imperfectly adheres to paper in drying.

Hab.: entangled on other algae. Hakodate, Enoshima.

PL. CLXXXIX. Fig. 1: frond of *Antithamnion Plumula* (Ellis) Thur., $\frac{1}{1}$.—Fig. 2: portion of frond magd., $\frac{5}{1}$.—Fig. 3-4: terminal portion of frond bearing tetraspores and gland-cells, g ; 3, $\frac{220}{1}$, 4; $\frac{80}{1}$.—Fig. 5: cystocarpic frond, $\frac{83}{1}$.—Fig. 6-8: different portions of one and the same frond showing the mode of branching of laciniae; 6, middle portion, stem measuring ca. 150μ in thickness; 7-8, lower portion; 6-7, $\frac{83}{1}$, 8, $\frac{110}{1}$.—Fig. 9-12: laciniae bearing tetraspores, $\frac{83}{1}$, $\frac{80}{1}$, $\frac{220}{1}$, $\frac{110}{1}$, resp.—Fig. 13: basal portion of frond, $\frac{80}{1}$. (Fig. 1, 5-9, and 13: same specimen from Enoshima col. 10, April, 1921; Fig. 2-4, 10-12: same specimen from the same place col. 6, May, 1900.)

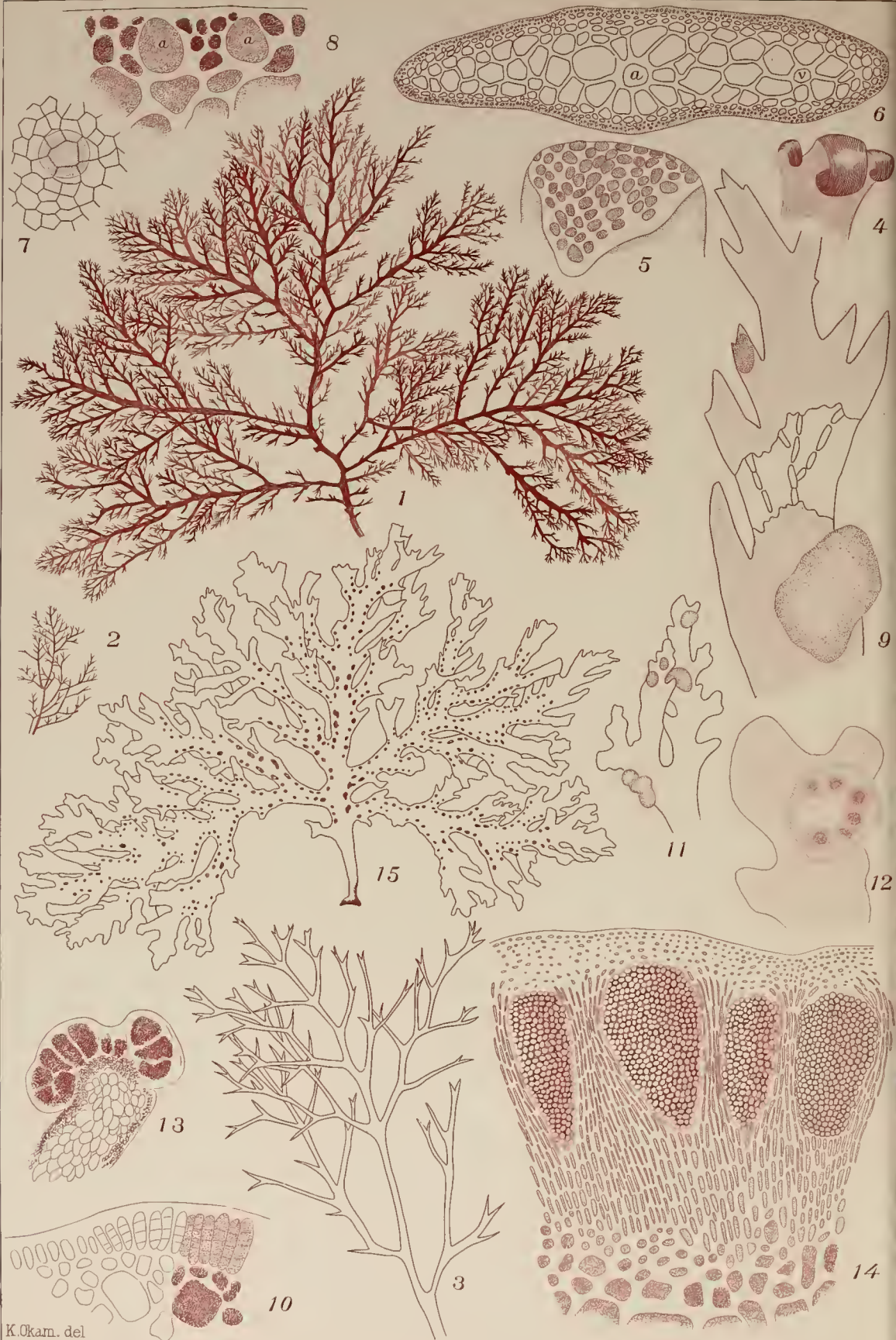
Chondrococcus Hornemanni (Mert.) Schmitz.

Nom. Jap.: *Hosoba-naminohana*.

PL. CXC, fig. 1-14.

Chondrococcus Hornemanni (Mert.) Schmitz Mar. Florid. v. Deuts. Ostaf. (1895) p. 170; De Toni Syll. Alg. IV, p. 1674; Okam. Synop. 日本藻類名彙 (2nd. ed.) p. 116.—*Desmia Hornemanni* J. Ag. Sp. Alg. II, p. 641.—*Desmia coccinea* Zanard. Plant Mar. Rubr. p. 55, l. 9, f. 1.

Fronds coespitose, rising from a small scutate disc, 4-5 times pinnately branched in disticho-alternate manner, subflabellately expanded, linear, compressed or a little thickened below, ecostated, 12 cm. high,



K. Okam. del

7 2 13 10 8 15 3 1 5 11 6 4 12 9 14

Chondrococcus Hornemanni (Mert.) Schitz ほそばなみのはな Fig. 1-14

Chondrococcus Japonicus (Harv.) Okam. なみのはな Fig. 15

1-2 mm. broad. Main branches irregularly alternate, rather naked below, with lower branches the usually longest, becoming gradually shorter above; branches of every order are in similar mode of ramification, furnished along the margins with sharpish or often deltoideo-obtuse simple or divaricated teeth. All the branches very patent arising on rather roundish axils, straight or rolled up at apices. Glandular cells full of yellowish contents are scattered beneath the cortex. In some cases fronds bearing slenderer branches are seen which have an appearance quite differing from the normal ones (fig. 2-3).—*Tetraspores* forming irregularly roundish nemathecium, slightly elevated, and arranged often in row along the margins or on the intramarginal surfaces of branches. *Cystocarpic* warts are similar in the shape and position as tetrasporic nemathecium. *Colour* deep red. *Substance* rigid when fresh, soon turning to subgelatinoso-membranaceous and the plant pretty well adheres to paper in drying.

Hab.: on rocks between tide-marks near low tide; from Ryukyu to Rikuzen; Tango and Echigo.

PL. CXC. fig. 1-14. Fig. 1: frond of *Chondrococcus Hornemanni* (Mert.) Schm., $\frac{1}{1}$.—Fig. 2: smaller frond bearing very slender segments, from Nō, $\frac{1}{1}$.—Fig. 3: portion of fig. 2, magd., $\frac{5}{1}$.—Fig. 4: rolled apices of a branch slightly magd.—Fig. 5: apical cell of a branch, magd.—Fig. 6: cross-section of frond; *a*, the central axis; *v*, vein, $\frac{48}{1}$.—Fig. 7: glandular cell seen through the epidermis, $\frac{567}{1}$.—Fig. 8: cortical layer bearing glandular cells, *a*, $\frac{353}{1}$.—Fig. 9: portion of frond bearing tetrasporic nemathecium showing the central axis and veins, $\frac{34}{1}$.—Fig. 10: cortical portion bearing tetraspores, magd.—Fig. 11: branch bearing cystocarpic warts, $\frac{8}{1}$.—Fig. 12: cystocarpic wart, $\frac{34}{1}$.—Fig. 13-14: vertical section of cystocarpic wart; 13, $\frac{34}{1}$; 14, magd.

Chondrococcus japonicus (Harv.) Okam.

Nom. Jap.: *Namino-hana*.

PL. CXC, Fig. 15.

Chondrococcus japonicus (Harv.) Okam. Alg. Jap. Exsic. no. 35 (1899).—Matsumura and Miyoshi Cryptog. Jap. Icon. Illustr., 1901, vol. I. no. 12, pl. 58.—*Chondroc.?* *japonicus* (Harv.) De Toni Phyc. Jap. Nov. (1895) p. 39; Id. Syll. Alg. IV, p. 1677.—*Desmia japonica* Harv. Char. new Alg. (1859) no 23; Okam. in Bot. Mag. Tokyo, 1893, p. 321 (tetraspore).

Mode of ramification, characters of the both kinds of fruits are all similar to those of *Ch. Hornemanni*, only differing in the breadth of frond and form of ultimate pinnellae or marginal laciniae. Fronds are compresso-flat, broadly linear, 2-3 mm. broad, with often blunt and obtuse, crenulated and irregularly placed pinnellae or marginal processes. Often there are many forms having the appearance intermediate between the two species which are to be separated scarcely one from the other, fronds being more narrow and branches being sharply pointed.

Hab.: Boshyu and Sagami.

PL. CXC, fig. 15: frond of *Chondrococcus japonicus* (Harv.) Okam. n nat. size.

Rhodomela C. Ag. 1823. ふぢまつも屬.

RHODOMELACEAE. ふぢまつも科

體ハ直立シ、圓柱狀ニシテ各方面ニ分岐シ、可ナリ厚キ質ヲ有シ、細胞組織ニテ成ル：各軸ハ其頂部ニ近ク螺旋狀ニ互生セル單管狀ノ毛狀葉ヲ有スル頂端ヲ以テ眞直ニ成長ス、此毛狀葉ハ直ニ脱落ス。各軸ニ於テハ明ニ關節セル多管軸ハ見ルコトヲ得ズト雖モ、關節セル中軸ハ之ヲ認ムベク、其周圍ニ關節セザル細胞ヨリ成レル數層ノ皮部組織アリテ密ニ中軸ヲ圍ミ、其細胞ハ内部ノモノ大ニシテ外部ニハ小ナリ；唯成長點ニ近ク多少明ニ關節セル只一層ノ細胞ヨリ成レル皮層ヲ認ムルヲ得ベシ。各軸ノ成長部ハ成長點細胞ヲ有シ、其關節細胞ハ總テ各一條ノ枝ナル細胞ヲ生ズ。此枝ナル細胞ハ螺旋狀ニ互生シ後毛狀葉トナリ又ハ側面ニ伸長スル枝トナル、而シテ關節細胞ハ枝ナル細胞ノ外ニ4-6個ノ周心細胞ヲ分裂シ、其周心細胞ハ更ニ放射狀又ハ横ニ分裂ス、故ニ中軸ノ關節細胞ハ早ク既ニ不同ノ大サノ細胞ヨリ成レル、一層ノ管狀層ヲ以テ圍繞セラル、ニ至ル。次ニ此管狀層ヲナセル細胞ハ外方ニ細胞ヲ分裂シ、其細胞又更ニ外方ニ分裂シテ皮部組織ヲ形成ス。一生殖器ハ上部ノ枝ノ上部ニ形成セラル。四分胞子ハ普通ノ枝ト大シテ變形セザル小枝ニ多數ニ形成セラル；其枝ハ皮層組織ヲ存シ、毛狀葉ナシ；而シテ實ヲ熟スベキ各關節細胞ニ二個、稀ニ一個形成セラル、一個ノ周心細胞ガ二個ニ分裂シタル其上部ノ細胞ニ於テ成リ、外方ニハ二個ノ同長ナル蓋細胞ヲ以テ蔽ハル、而シテ其之ヲ生ズル枝ニ於テ斷續セル螺旋縱列ヲナシテ不規則ニ交互シ或ハ不規則ニ斜ニ十字狀ニ交リ稀ニ同位置ニ對ヲナシテ存ス。精子器ハ多クハ長味ヲ有シ、短柄ヲ存シ、先端尖リ、表面ニ小サキ細胞ヨリ成レル精子細胞ヲ以テ蔽

ハレ、早晚有限的ニ伸長スル枝ノ頂部ニ近ク澤山ニ形成セラル、而シテ概ネ毛狀葉ナキ且分岐セザル短キ有限的成長ヲナセル側枝ノ軸ヨリ形成セラル、カ或ハ側枝ノ如ク丈夫ニナリタル分岐セザル毛狀葉ヨリ形成セラル。胎原ハ毛狀葉ノ第二ノ關節細胞ヨリ多數ニ形成ヒラレ、可ナリ小ニシテ、僅ニ蔽ハレタル胎原列ヲナス。囊果ハ球狀—卵形ニシテ、多クハ可ナリ長キ柄ヲ有ス。果皮ハ可ナリ薄ク、胞子ハ棍棒狀ニシテ胞子絲ノ頂端ニ生ズ。

北半球ノ寒冷ナル海ニ産ス、約 5 種アリ。Rh. subfusca C. Ag. ハ模範種ナリ。一屬ノ名ハ rhodos (赤) ト melas (黒) トヨリ成ル、即チ體色ヨリ取レリ。

Rhodomela subfusca (Woodw.) C. Ag.

いとふちまつ。 岡村 稱。

第 CLXXXVI 圖版, 第 CLXXXVII 圖版, 1-13 圖。

體ハ數莖叢生シテ同一ノ小盤狀根ヨリ立チ、13-20 cm. 高ク體ノ下部ヨリ多少規則正シク 3-4 回羽狀ニ分岐ス。體ハ圓柱狀又ハ絲狀ニシテ、極メテ細キアリ又ハ稍太キアリ、其越年セル老者ニアリテハ體ノ下部ハ往々堅クシテ莖ノ如キ觀ヲ呈ス(第 CLXXXVI 圖版, 1 圖)。枝ハ廣開シ、或モノニテハ略ボ眞直ニ、他ノモノニテハ輕ク雁木狀ニ屈曲シ、中央ノモノ概ネ最モ長ク、多少密ニ小枝ヲ以テ蔽ハル; 小枝ハ單條又ハ其頂端ニ近ク數條ノ最末小枝ヲ存ス; 小枝ハ螺旋狀ニ列シ、錐ノ如クシテ內方ニ屈曲シ(2 及 4 圖)、老成セルモノハ往々反曲ス(1 圖)。小枝ハ其長キモノニテハ 10-12 mm. 長ク(2 圖)、短キモノニテハ 0.5-1 mm. 長シ。—四分胞子ハ小枝ニ形成セラル、充分熟スルニ到レバ瘤狀ニ隆起ス(第 CLXXXVII 圖版, 9-10 圖); 或植物

ニテハ四分胞子ヲ藏スル小枝ヲ有スル枝ハ矮小トナリ小枝ノ腋ヨリ束狀ニ出ル如ク見ユルコトアリ(8圖)。精子器ハ長橢圓形ニシテ小枝ノ頂端ヨリ生ズル毛狀枝ニ形成セラル。囊果ハ卵圓形ニシテ廣キ果孔ヲ存シ、小枝ノ側面ニ座ス、短柄アリ。色ハ生鮮ノ時ハ暗褐色又ハ黃褐色ニシテ乾燥スル時ハ黒色トナル。質ハ幼キ部分ハ軟カナレドモ、老成部ハ稍硬ク、乾燥スル時ハ紙ニ附着スルコト充分ナラズ。

產地：潮線間ノ岩石ニ附着シ寧ロ高潮線ニ近ク波浪ノ衝ニ當ラザル所ニ生ズ。占守島ヨリ常陸；Imperatorskaya, 樺太, 北海道西岸ヨリ能登輪島ヲ經テ筑前志賀島, 長崎縣南高來郡ニ至リ瀬戸内ニ入リ中ノ關(山口縣), 伊豫新濱, 明石(兵庫縣)ニ達ス。朝鮮龍岩浦。

分布：太西洋及太平洋ノ北部。

Rhodomela 屬ノ各種ノ區別ハ極メテ困難ニシテ殊ニ Rh. subfusca, virgata 及ビ lycopodioides ニ於テ然リトス、隨テ從來夫等ノ間ニ往々錯雜ヲ生ジタリ。予ハ茲ニ本種ヲ査定スルニ當リ Kjellman 氏ガ本種ニ與ヘタル性質ニ準據セリ、即チ Rh. subfusca ノ小枝ハ基部クビレルコトナク且暖地迄モ産シ Rh. lycopodioides, ノ小枝ハ基部クビレ專ラ寒地ニ産スト云フニ依レリ。然レドモ予ノ有スル許多ノ標品中主トシテ產地ノ關係ヨリ種々微細ノ點ニ於テ異ナルモノアリテ他日精細ニ之ヲ調査セバ或ハ數個ノ變種ヲ爲スニ至ルベシト思ハル、モノアリ。

第 CLXXXVI 圖版ニ示シタル體形ハ幾分邦内ニ産スル本種ノ代表ト見做スヲ得可シ。邦内ニ産スル本屬ノ二種中本種ハ弘キ分布ヲ有シ占守島ヨリ九州ニ亘ル、隨テ種々ノ體型アリ。第四圖ハ南方ノ形ニシテ第一圖ハ北方ノモノナリ、而シテ第三圖ハ纖弱ナル體形ノモノト考フルヲ得ベシ、蓋シ該種ハ北海道網走ニテ採集シタルモノニシテ其處ニハ暖流ノ末浜ガオコツク海ニ注ク所ナレバナリ。第二圖ニ示シタルモノハ

大正四年ノ夏季室蘭ニ於テ採集シタルモノニシテ極テ強盛ナル體形ヲ有シ、他ノ體形ト甚シク異ナル外觀ヲ呈ス。

第 CLXXXVI 圖版. 1: 越冬セル體ヨリ方サニ春季ノ新條ヲ伸長シタルモノ, 占守産, $\frac{1}{1}$.—2: 夏季ノ室蘭品, $\frac{1}{1}$.—3: 夏季ノ網走品, $\frac{1}{1}$.—4: 夏季ノ陸前磐井岬品, $\frac{1}{1}$.

第 CLXXXVII 圖版. 1-13 圖. 1: 實ナキ枝ノ頂部ニシテ小枝及最末枝ノ配列ヲ示ス, $\frac{13}{1}$.—2: 體ノ成長點, $\frac{353}{1}$.—3: 一ノ軸ノ頂端ニ近ク存スル小枝ノ頂端ニシテ毛狀枝, h , ト頂細胞, a , トヲ示ス, $\frac{353}{1}$.—4: 體ノ横斷面; c , 中軸細胞, $\frac{220}{1}$.—5: 體ノ縦斷面; c , 中軸細胞, $\frac{220}{1}$.—6: 枝ノ頂部ニシテ精子器ヲ有スルモノ, $\frac{16}{1}$.—7: 精子器, $\frac{83}{1}$.—8: 短縮セル枝ニ四分胞子ヲ有スル小枝ヲ附ケタルモノ, 稍廓大.—9: 通常ノ枝(短縮セザル)ニ在ル四分胞子ヲ熟セル小枝, $\frac{22}{1}$.—10: 「ステイキジア」ノ側面ヨリ四分胞子ヲ見タルモノ, $\frac{48}{1}$.—11: 四分胞子ト蓋細胞トヲ示ス, $\frac{220}{1}$.—12: 囊果ヲ有スル枝, $\frac{13}{1}$.—13: 囊果, 稍廓大. (1, 3, 4-5, 11-12 圖ハ小名濱産ノ「アルコール」品ヨリ畫ク).

Nemalion multifidum (W. et. M.) J. Ag.

つくものり.

第 CLXXXVII 圖版. 14-16 圖.

體ハ絲狀, 軟弱, 數莖同一ノ小盤狀根ヨリ出デ, 蠕虫狀ヲナシ, 高サ約 10 cm. 太サ約 1 mm., 漸次上方ニ細ク, 數回不規則ニ叉狀ニ分レ腋圓クシテ廣開ス. 類化絲ハ念珠狀ヲナシ其下部ノ關節細胞ハ太サヨリモ稍長ク漸次上方ニ大キク且球狀ヲナシ, 最上部ノ細胞ハ太サ約 120 μ アリ. 色ハ乾燥品ニテ暗褐紅色ナリ. 質ハ粘柔ニシテ體ハ密ニ紙ニ附着ス.

產地：阿波那賀郡答島（明治十六年水産博覽會出品）；稀ナリ。

第 CLXXXVII 圖版, 14-16 圖. 14: つくものり, *Nemalion multifidum* (W. et M.) J. Ag. ノ體, 1.—15: 腊葉品ノ體ノ横断面, 直徑 0.8 mm.; $\frac{1.52}{1}$.—16: 類化絲ト根様細胞, $\frac{3.53}{1}$.

Rhodomela Larix (Turn.) C. Ag.

ふぢまつも 岡村稱.

第 CLXXXVIII 圖版, 1-4 圖.

根ハ小塊狀根. 體ハ直立シ, 圓柱狀ノ莖ヲ以テ叢生ス, 高サ 15-25 cm, 1-1.5 cm. 太ク, 一條ノ主幹ヲ存ス, 而シテ頂端ヨリ基部ニ至ル迄幹ト同様ノ枝ヲ存シ, 枝ハ廣開シ, 不規則ナル螺旋狀ヲナシテ互生ニ配置シ (或モノハ 10 cm, 他ノモノハ 3-5 mm. 長ク, 中央ノモノ一般ニ最モ長シ) 幹ト同様ニ總テ廣開セル小枝ヲ以テ蔽ハル; 小枝ハ小サキ叢ヲナシ, 各叢ノ間ニ極メテ短キ間隔ヲ存シ, 單條ニシテ錐狀ヲナシ, 2-3 mm. 長ク, 獸毛 (豚) 程ノ太サアリ. 小枝ノ此叢生セル排列ハ枝ニ於テ殊ニ明ニシテ且莖ノ下部ヨリモ上部ノ方ニ能ク視ルコトヲ得ベク, 下部ノ方ニテハ各方面ニ覆瓦様ニ並列スレドモ寧ロ疎トナリ爲ニ莖ハ全部露出スルニ至ル. —「スチキシア」ハ小枝ノ腋ヨリ生ズル短縮セル軸ニ在ル小枝ヨリ變成シ, 内方ニ屈曲シテ叢生シ, 中性ノ小枝ノ半分程ノ細サニシテ其ヨリモ短ク, 圓柱狀絲狀ナリ. 色ハ生鮮ノ時ハ濃キ暗褐色ニシテ乾燥スルトキハ殆ト黑色トナル. 質ハ軟骨質ニシテ屈撓性ヲ有シ強靱ナリ; 乾燥スルニ至ルモ體ハ餘リ外貌ヲ變セズ, 紙ニ附着スルコト不完全ナリ.

產地：開濶ナル沿岸ノ岩石ニ生ジ高潮線ニ近ク潮線間ニ生ズ. 千島ヨリ陸前ニ至ル.

分布：北部太平洋。

本植物ハ開濶ナル沿岸ニ於テ波浪ノ衝ニ當ル所ニ産ス。
本種ト Rh. subfusca ト互ニ近ク生ズル所ニテハ後者ハ波ノ蔭ト
ナル所ニ在レドモ、前者ハ其衝ニ當ル所ニ産ス。

第 CLXXXVIII 圖版, 1-4 圖. 1: ふぢまつも, Rhodomela Larix
(Turn.) C. Ag. ノ體, $\frac{1}{1}$.—2: 五月六日占守島産ノ四分胞子ヲ有ス
ルモノ, $\frac{1}{1}$.—四分胞子ヲ有スル枝ノ頂部, $\frac{16}{1}$.—4: 第3圖ニ示シ
タル「スチキジア」ヲ有スル小枝ノ一ツ, $\frac{48}{1}$.

Roschera Sonder 1879.

いとくづぐさ屬.

RHODOMELACEAE ふぢまつも科.

體ハ直立シ、他ノ海藻ノ間ニ經絡シテ立ち、絲狀ニシテ各
方面ニ分岐ス、多管軸ハ4周心管ヲ有シ全部皮層細胞ヲ被ム
ラズ。長條枝ハ其全長ニ於テ $\frac{1}{4}$ ノ列序ヲ以テ螺旋狀ニ交互
ニ出タル短キ分岐セル側枝ヲ以テ蔽ハレ、側枝ハ有限成長ノ
モノニシテ宛モ柄ヲ有シタル星狀ノ小塊ノ如キ形狀ヲナス。
長條ノ伸長ハ水平ノ分裂面ヲ有スル頂細胞ヲ有シ其各關節細
胞ハ一條ノ毛狀葉トナルベキ初期ノ細胞ヲ分裂ス；此初期ノ
細胞ハ直ニ枝トナリテ伸ビ、數個ノ枝ナキ關節細胞ヲ分裂シ
タル後其上部ハ更ニ同様ニ分岐ス。枝ノ短縮シテ分岐シタル部
分ニ於テ下部ニアル 3-5 ノ毛狀葉トナルベキ初期ノ細胞ハ圓錐
狀ノ、太キ、廣開セル、多管軸ノ刺トナリ（其刺ハ更ニ分岐セン
トスル形跡ヲ有スルコトアリ）而シテ上部ノモノハ常ニ微弱ナ
ル發育ヲナシテ、單管ニシテ分岐セザル毛狀葉トナリテ各刺ノ
中央ヨリ發出ス。毛狀葉ト刺トノ間ヨリ往々毛ノ如キ根ヲ生
ジ、此根ハ折々其先端扁平ナル盤狀ニ展ガリ體ヲ他物ニ固着
セシム。側枝トナルベキ初期ノ細胞ハ星狀ニ短縮シタル枝ト
ナル代リニ多少長ク伸タル長條枝トナルコトアリ。——生殖器

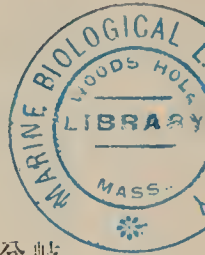
ハ星狀ノ小塊ヲナセル部分ニ形成セラレ、其部ハ之ガ爲ニ特ニ變形スルコトナシ。四分胞子ハ太キ刺ニ生ジ或ハ星狀ノ小塊ヲ有スル軸ニ形成セラル、微弱ナル星狀ノ小塊ニ生ジ、時ニ一個、時ニ2-3個形成セラル、而シテ外方ニ突起セル瘤ノ如キ形狀ヲナシ、其之ヲ生ズル關節ニ一個ヅ、生ジ、交互ニ配置セラレ、外部ニハ2-3個ノ同長ナル蓋細胞ヲ以テ蔽ハル。精子器ハ未詳。胎原列ハ星狀塊ノ真中ニ少數形成セラレ、單管ナル毛狀葉ノ關節ニ存ス；囊果ハ卵形ニシテ、小サク、星狀塊ノ真中ニ通常一個形成セラレ、殆ド無柄ニシテ、星狀ノ枝ヲ以テ圍マル。果皮ハ可ナリ薄シ；胞子ハ割合ニ大ク、棍棒狀ナリ。

印度洋及太平洋ノ暖部ニ1種若クハ2種ヲ産シ往々可ナリ變形ス。下記ノモノハ模範種ナリ。一屬ノ名ハ Roscher 氏ノ名ニヨル。

Roschera glomerulata (C. Ag.) Web. v. Bosse.

いとくづぐさ 岡村 稱。

第 CLXXXVIII 圖版, 5-10 圖。



體ハ他ノ海藻ノ間ニ錯綜シテ立チ、絲狀ニシテ側面ニ分岐ス。長條枝ハ其全長ニ於テ螺旋狀ニ配列セル、 $\frac{1}{2}$ ノ序列ヲ以テ互生セル短條枝即チ側枝ヲ以テ圍繞セラレ、其側枝ハ短キ柄ヲ有スル星狀ノ小塊ノ如キ觀ヲ呈ス。枝ハ廣開シ或ハ殆ド水平ニ出ヅ。刺狀ノ小塊ハ短キ太キ圓錐狀ノ廣開セル多管軸ノ刺ヨリ成リ、刺ハ更ニ分岐スルコトアリ。時トシテハ長キ單細胞ヨリ成レル毛狀ノ根アリテ、星狀ノ小團塊ノ中央ヨリ出デ、往々其頂端ニ盤狀ニ展ガリタル附着器ヲ形成シテ體ヲ他物ニ固着セシム。關節ノ長サハ其徑ト略ホ同長若クハ稍短シ。體ハ圓柱狀又ハ多少角張リタリ。色ハ暗紅褐色ナリ。質ハ軟キ膜質ニシテ乾燥スル時ハ紙ニ固着セズ。

產地：他ノ海藻ニ纏絡ス。琉球，小笠原島，房州。

分布：熱帶部 オーストラリア，太平洋諸島，印度洋，亞弗利加，日本。

第 CLXXXVIII 圖版，5-10 圖。5：いとくづぐさ，*Roschera glomerulata* (C. Ag.) Weber v. Bos., $\frac{1}{1}$ 。—6：枝， $\frac{16}{1}$ 。—7：枝ノ一部ニシテ短條枝ノ互生スル狀ヲ示ス， $\frac{83}{1}$ 。—8：毛狀ノ根ヲ有スル枝ノ一部， $\frac{48}{1}$ 。—9：體ノ成長點， $\frac{353}{1}$ 。—10：體ノ横斷面， $\frac{48}{1}$ 。

Antithamnion Nägeli 1947. よつがさね屬。

CERAMIACEAE. いぎす科。

體ハ纖細ナル絲狀ニシテ，概ネ叉狀ニ分岐シ(聯基的伸長法ニテ)；主枝ハ一列ノ細胞ヨリ成リ，對生又ハ輪生セル，且ツ概ネ密ニ分岐セル短條枝ヲ存ス。此短條枝ノ枝ニ往々特殊ノ腺細胞ヲ形成ス。四分胞子ハ十字樣ニ分裂シ，短條枝ノ小枝ノ頂端ニ形成セラル。精子器ハ小サキ小枝ノ叢ニシテ，短條枝ノ最末枝ノ頂端ニ在リ。胎原列ハ短條枝ノ基部ノ細胞ノ側面ニ形成セラル；實ヲナスベキ短條枝ハ一條ノ枝ノ其處此處ニ散在シ，或ハ短クナリタル枝ノ頂端ニ接近シテ團集ス，然ル時ハ漸次ニ簡省セラレ，遂ニ極メテ小ナル數個ノ胎原トナル。囊果ハ多クハ枝ノ短クナリタル爲ニ其頂端ニ存スルニ到リ，時トシテハ後生的ニ生ジタル最上部ノ短條枝ヲ以テ苞枝ノ如ク圍マル。或種ニテハ四分胞子ヲ有スル體ガ枝ノ頂端ニ「パラスポール」(一種ノ無性胞子)ヲ生ジ僅少ノ若クハ多數ノ細胞ヨリ成レル不規則ナル團塊ヲナス。

温暖及寒冷ナル海ニ約 10 種アリ。一屬ノ名ハ *anti* (反對) ト *thamnion* (小枝) トヨリ成ル，即チ對生スル小枝ノ意ニ取ル。

Antithamnion Plumula (Ellis) Thur.

よつがさね 岡村新稱.

第 CLXXXIX 圖版.

體ハ纖細ナル絲狀ニシテ (或モノハ中央部ニ於テ太サ約 150 μ アリ) 不規則ナル叉狀様羽狀ニ分岐シ, 各關節ノ頂端ニ近ク對生又ハ四個ノ輪生セル短條枝ヲ發シ, 此短條枝ハ四縱列ヲナス. 短條枝ハ其内側即チ上部ノ側面ヨリ小枝ヲ偏生シ殆ド水平ニ出デ, 或ハ下部ノ老成セルモノニアリテハ下方ニ反曲シ, 廣開シ又ハ枝ノ上部ノ方ニ於テハ廣ク開出ス; 小枝ハ單條又ハ同様ニ配置セル, 且廣開セル僅少ノ最末小枝ヲ存ス. 軸ノ兩側ヨリ出ル短條枝ハ複性ニシテ枝ヲ分チ, 同一ノ關節ヨリ出デ、之ト交互スルモノハ概ネ單條又ハ僅ニ分枝ス. 各部ノ枝ノ頂端ハ尖銳ナリ. 根ハ體ノ下部ノ關節ヨリ出ル短條枝ヨリ變成ス. 關節ハ直徑ノ 2.6 倍長ク, 體ノ頂部及ビ基部ノ方ニ漸次短ク又ハ徑ト略ボ同長トナリ, 圓柱狀又ハ中央部ニ於テ輕ク狹細トナル. 幼キ最末小枝又ハ短條枝ノ上部ノ關節ノ側面ニ通常腺細胞ヲ存シ, 透明ナル若クハ黃色ナル物質ヲ含ム.——四分胞子ハ球狀又ハ卵圓形, 概ネ十字様ニ分裂シ, 小枝又ハ最末小枝ノ側面ニ單獨若クハ數個集合シ, 概ネ無柄, 稀ニ短柄ヲ有ス. 囊果ハ大ニシテ, 球狀, 2-3 個ノ仁ハ上部ノ枝ノ頂端ニ聚合シ, 短條枝ヲ以テ圍繞セラル. 色ハ淡紅色. 質ハ膜質ニシテ, 體ハ乾燥スルトキハ紙ニ附着スルコト不充分ナリ

產地: 他ノ海藻上ニ卷絡ス; 函館, 江ノ島.

分布: 地中海, 太西洋, 濠洲, 日本.

第 CLXXXIX 圖版. 1: よつがさね, *Antithamnion Plumula* (Ellis) Thur. ノ體, $\frac{1}{1}$.—2: 體ノ一部, $\frac{5}{1}$.—3-4: 四分胞子及腺細胞, g , ヲ有スル體ノ頂部; 3, $\frac{220}{1}$; 4, $\frac{80}{1}$.—5: 囊果ヲ有スル體, $\frac{83}{1}$.—6-8: 同一ノ

體ノ各部ニシテ、小枝ノ分枝スル容子ヲ示ス; 6, 中央部, 莖ハ太サ約 150μ ; 7-8, 下部; 6-7, $\frac{83}{1}$; 8, $\frac{110}{1}$.—9-12; 四分胞子ヲ有スル小枝, 夫々 $\frac{83}{1}$, $\frac{80}{1}$, $\frac{220}{1}$, $\frac{110}{1}$.—13: 體ノ下部, $\frac{80}{1}$. (1, 5-9, 及 13 圖: 相州江ノ島産ノ同一標品, 大正十年四月十日採; 2-4, 10-12 圖: 同地産ノ同一體, 明治三十三年五月六日採).

Chondrococcus Kützing (1847) 1849.

なみのはな屬.

RHIZOPHYLLIDACEAE. リゾフ井リス科.

體ハ扁平ニシテ兩縁ニ薄ク、羽狀ニ分岐シ、互生シ、下部時トシテハ明瞭ナラザル中肋ヲ存シ、上方ニハ鈎狀ニ屈曲セル成長端ヲ有シ、軟骨様膜質ナリ; 中軸ハ可ナリ太キ長キ關節細胞ヨリ成リテ其兩縁ヨリ枝ノ裂片及縁邊ノ刺狀部ニ互生ニ分岐シ、可ナリ密ナル皮部ヲ以テ蔽ハル、皮部ノ細胞ハ内方ニ大ニ、外方ニハ小ナリ; 外部ノ皮層中ニ可ナリ大ナル腺様細胞多數ニ散在ス; 細胞間物質ハ極メテ速ニ粘化シ體ハ解頽ス。成長點ハ斜ニ若クハ横ニ關節セル頂細胞ヲ有シ、其關節セル細胞ハ兩側ニ於テ交互ニ關節ス。——四分胞子ハ扁平ナル疣狀ニ隆起セル群ヲナシテ體ノ扁キ表面ニ散在シ、各群ノ間ニ中性ノ絲アリテ群ヲ分ツ如キコトアラズ、而シテ斜ニ (又ハ不規則ニ) 十字様ニ分裂ス。雌性「ネマセシア」ハ體ノ上部ニ於テ體ノ表面ニ若クハ兩縁ニ沿フテ散在ス。囊果ハ概ネ不規則ニ疣狀ニ厚クナリタル「ネマセシア」ノ内ニ多數ニ存シ、疣ハ往々互ニ癒合ス、而シテ「ネマセシア」ノ組織ノ上部ノ厚クナルコトニヨリテ果皮ノ如ク蔽ハル; 成胞絲ハ長ク伸ビタル柄ヲ有シ、不規則ニ桑實狀ニ分レ、中性組織ヲ以テ互ニ隔離セラレタル小仁ヲナシ、小仁ハ多數ノ胞子ノ團集ヲ以テ成ル。

約 10 種アレドモ未ダ充分ニ研究セラレザルモノ多ク、印

度洋及太平洋ノ暖部ニ存ス; 本邦僅ニ二種アルノミ、一屬ノ名ハ chondros (軟骨様) 及 cocos (小粒) ヨリ成ル。

Chondrococcus Hornemanni (Mert.) Schmitz.

ほそばなみのはな 岡村 稱。

第 CXC 圖版, 1-14 圖。

體ハ叢生シ, 小サキ盤狀根ヨリ立チ, 兩縁ヨリ 4-5 回羽狀ニ互生ニ分岐シ, 稍扇狀ニ擴ガリ, 線狀ニシテ, 扁壓シ又ハ下部稍太ク, 中肋ナク, 高サ 12 cm, 幅 1-2 mm. アリ, 主枝ハ不規則ニ互生シ, 下部稍枝ナク, 下部ノ枝通常最モ長ク, 漸次上方ニ短ク成ル。各部位ノ枝モ亦同様ニ分岐シ, 縁邊ニ沿フテ銳キ若クハ往々三角形ノ鈍頭ナル單條又ハ不規則ニ分裂セル齒ヲ有ス。枝ハ總テ甚シク廣開シ, 稍圓キ腋ヲ以テ立チ, 頂端直出或ハ卷ク。上皮部ノ下ニ黃色ノ内容物アル腺細胞散在ス。或場合ニハ細キ枝ヲ有スル體アリテ普通ノモノトハ全ク異ナリタル外形ヲ有スルモノアリ, 殊ニ日本海ノモノニ多シ (2-3 圖)。四分胞子ハ不規則ナル圓キ「ネマセシア」ヲ形成シテ少シク隆起シ, 兩縁ニ往々一列ニ連リ又ハ縁邊ヨリ少シク内部ニ存ス。囊果モ亦疣狀ヲナシ其形狀並ニ位置ハ四分胞子ノ「ネマセシア」ニ同ジ。色ハ濃紅色ナリ。質ハ鮮時ハ硬ケレドモ少時ニシテ粘滑ナル膜質ニ變ジ乾燥スル時ハ可ナリ能ク紙ニ附着ス。

產地: 低潮線ニ近ク潮線間ノ岩石上ニ在リ; 琉球ヨリ陸前ニ至ル間, 丹後及越後。

第 CXC 圖版, 1-14 圖。1: ほそばなみのはな, *Chondrococcus Hornemanni* (Mert.) Schm., $\frac{1}{1}$ 。—2: 極メテ細キ各部ヲ有スル小サキ體, (能生産), $\frac{1}{1}$ 。—3: 第2圖ノ一部, $\frac{5}{1}$ 。—4: 枝ノ頂端ノ卷キタル狀。廓大。—5: 成長點, 廓大。—6: 體ノ横斷面; *a*, 中軸; *v*, 側脈; $\frac{48}{1}$ 。—7: 上皮中ニ腺細胞ノ存スル狀, $\frac{567}{1}$ 。—8: 腺細胞, *a*, ヲ有スル上

皮層, $\frac{3.5.3}{1}$.—9: 四分胞子ノ「ネマセシア」ヲ有スル體ノ一部ニシテ, 中軸ト脉トヲ示ス, $\frac{3.4}{1}$.—10: 四分胞子ヲ有スル皮層, 廓大.—11: 囊果ノ疣狀ノ集團ヲ有スル枝, $\frac{8}{1}$.—12: 囊果ノ疣狀集團, $\frac{3.4}{1}$.—13-14: 囊果ノ集團ヲ縦斷シタルモノ; 13, $\frac{3.4}{1}$; 14, 廓大.

Chondrococcus japonicus (Harv.) Okam.

なみのはな 岡村稱.

第 CXC 圖版, 15 圖.

枝ノ打チ方, 四分胞子及囊果ノ性質等總テほそばなみのはな, *Ch. Hornemanni* ニ類似ス, 唯枝ノ幅ト最末羽枝即チ縁邊ニアル小裂片ノ形狀ヲ異ニスルノミ. 體ハ扁壓—扁平ニシテ, 幅廣キ絲狀ヲナシ, 幅 2.3 mm. ヲ有シ, 最末羽枝即チ縁邊ノ小裂片ハ往々鈍圓ニシテ小波狀缺刻ヲ有シ, 其排列亦不規則ナリ. 往々ニシテ前種ト本種トノ中間ノ如キ形狀ヲ有スルモノ多數アリ; 其體形枝狹ク且尖銳ナルヲ以テ何レノ種ニ屬スベキカ區別容易ナラザルモノアリ.

產地: 東海道沿岸殊ニ房州及相模ニ多シ.

第 CXC 圖版, 15 圖: なみのはな, *Chondrococcus japonicus* (Harv. Okam. ノ體, $\frac{1}{1}$.



K. Okam. del.

Ahnfeltia concinna J. Ag.
Delesseria Middendorffii Rupr.

さいみ Fig. 1-7.
ふがこのはり Fig. 8-11.

Ahnfeltia concinna J. Ag.

PL. CXCI, Fig. 1-7.

Nom. Jap.: *Saimi*.

Ahnfeltia concinna J. Ag. Sp. Alg. II, p. 312; Id. Epicr. p. 207; De Toni Syll. Alg. IV, p. 256; Yendo Notes on Alg. new to Jap. V, p. 256.—*Gymnogongrus implicatus* Kütz. Sp. Alg. p. 789; Id. Tab. Phyc. XIX, t. 69; J. Ag. Sp. Alg. II, p. 312.

Fronds gregarious, covering a wide range of area, erect, horny, subcylindrical, 5-15 cm high, 1-2 mm in diam., substipitate for a more or less long distance from the base, sometimes quite simple, but more usually divaricately branched upward in a ditrichotomous manner, and provided with proliferous branches, which often arise fasciculately or are arranged in secund manner. Segments cylindrical or slightly compressed, often corrugato-flexuose, and widely parted with an acute axil. *Cystocarps* many approximated in upper segments, slightly swollen out forming warty prominences. *Colour* dark purple or greenish, changing to blackish in drying. *Substance* horny and the plant does not adhere to paper in drying.

Hab.: On rocks extending from the mid-tide to little over the high tide mark, covering a wide range of area measuring 8-10 feet in height. Ogasawarajima, 7 islands of Idzu, Bosyu, Sagami, Ise.

PL. CXCI, fig. 1-7. Fig. 1: fronds of *Ahnfeltia concinna*, J. Ag. in nat. state and size.—Fig. 2-3: cystocarpic fronds in dried state, $\frac{1}{1}$.—Fig. 4: cystocarpic frond from Saganoseki in dried state, $\frac{1}{1}$.—Fig. 5: cross-section of branch bearing cystocarp, $\frac{48}{1}$.—Fig. 6: portion of the cross-section, $\frac{83}{1}$.—Fig. 7: portion of longitudinal section of branch, $\frac{353}{1}$.



Tetrasporic Sporophylls of *Delesseria Middendorffii* Rupr.

PL. CXCI, Fig. 8-11.

Addition to the description of *Delesseria Middendorffii* illustrated in the Icones Vol. II, no. 7, p. 118-120, PL. LXXXIV—LXXXV, fig. 1-7.

Tetrasporic sporophylls are proliferated solitarily or subfasciculate'y from the both sides of the midrib on both surfaces, globular, oval, oblong or obovate, thick and slightly depressed, shortly petiolated, sometimes winged along the margin, 1.5-2.5 mm long, 1.5-2 mm broad. In the cross-section of sporophyll two layers of tetraspores are observed on the upper and lower sides of the primary or fundamental layer and on both sides of the midrib. They are formed from sub-cortical cells lying between the epidermal and primary layers.

PL. CXCI, fig. 8-11. Fig. 8: leaf bearing tetrasporic sporophylls of *Delesseria Middendorffii*, Rupr., $\frac{1}{1}$.—Fig. 9: portion of the same, $\frac{5}{1}$.—Fig. 10: sporophyll seen from the marginal side, magd.—Fig. 11: half of the cross section of sporophyll, $\frac{48}{1}$.

Laurencia pinnatifida (Gm.) Lam.

Nom. Jap: *hane-sozo*.

PL. CXCII.

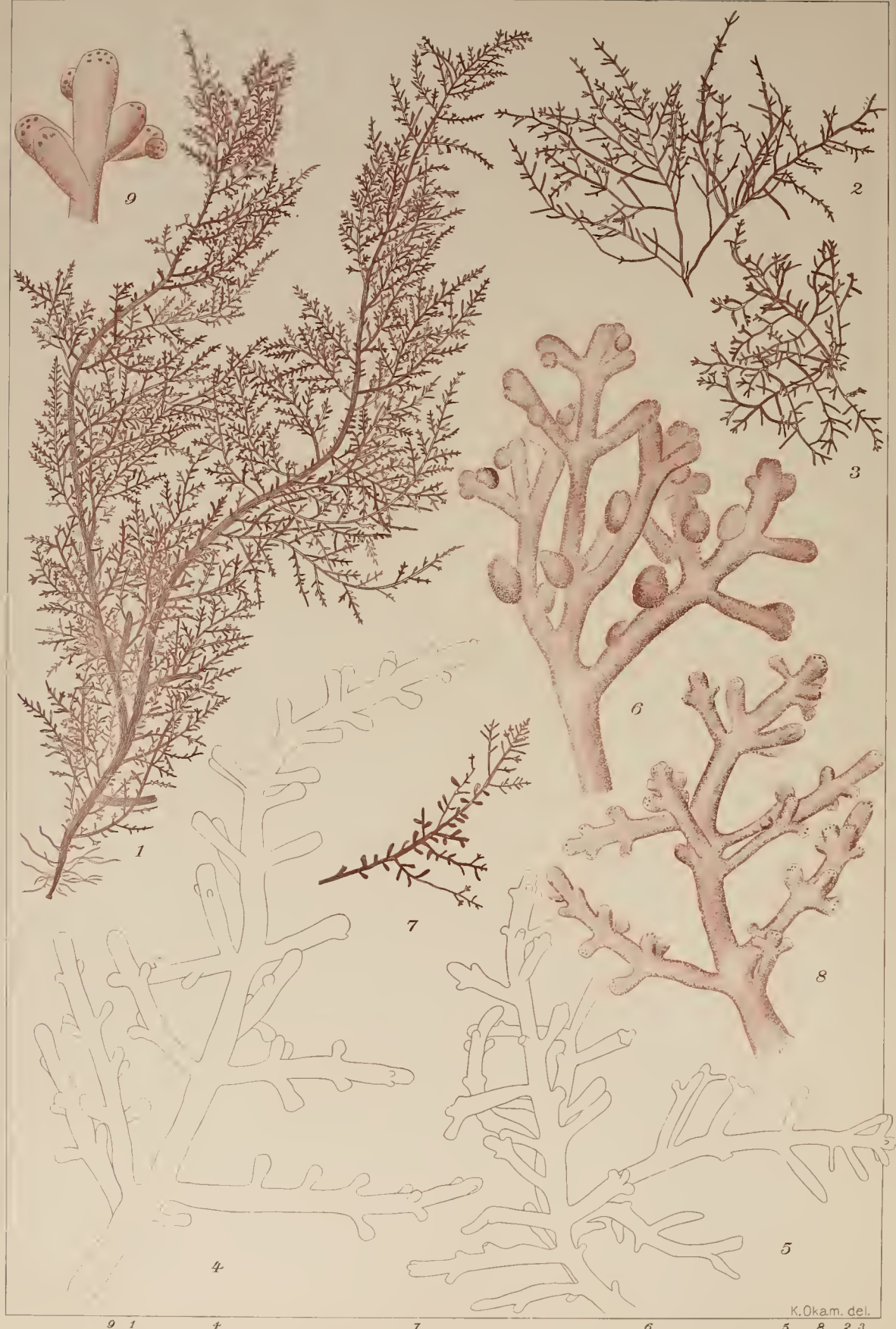
Laurencia pinnatifida (Gm.) Lamour. Essai p. 42; J. Ag. Sp. Alg. II, p. 764; Id. Epicr. p. 656; Kütz. Sp. Alg. p. 856; Id. Tab. Phyc. XV, Tab. 66, f. a-c; Harv. Phyc. Brit., Tab. 55; Hanck Meeresalgen, p. 208; De Toni Syll. Alg. IV, p. 798; Okam. Synop. 日本藻類名彙 (2nd. ed.) p. 69.—*Fucus pinnatifidus* Gmel. Hist. Fuc. p. 156, t. 16, f. 3; Turn. Hist. Fuci, t. 20.

Fronds coespitose, rising from a scutate disc, 5-15 cm high, almost cylindrical at the base, more or less compressed upward,



K. Okam. del

Laurencia pinnatifida (Gm.) Lam. はねそぞ



K. Okam. del.

Laurencia obtusa (Huds.) Lamour. みつでそぶ.

1-4 mm broad for the most part, 0.5-1 mm broad in the ultimate pinnellae, 2-3 times pinnately branched in disticho-alternate manner. Branches almost linear, often narrowed toward the base, or little broader upward, patent, standing on the angle of almost 45° , roundish or lobed at apices. Outline of branches is pyramidal, lower branches being the longest. Pinnellae simple, linear or linear-clavate, truncated or expanded toward apex, often much lobed. Tetraspores aggregated at the apical portion of pinnellae which do not change their form. *Cystocarps* ovato-urceolate with wide ostiole, sitting at the side of pinnulae. *Colour* dark purplish, often fading to greenish-yellow. *Substance* fleshy, soon becoming soft; the plant pretty well adheres to paper in drying.

Hab.: On rocks below low-tide. Common along the Pacific side from Ryukyu to Hakodate, and the Japan Sea.

PL. CXCII. Fig. 1-3: different forms of the frond of *Laurencia pinnatifida* (Gm.) Lamour., $\frac{1}{1}$.—Fig. 4: cross-section of branch, $\frac{8}{1}$.—Fig. 5: portion of branch magd., $\frac{7}{1}$.—Fig. 6: branch bearing tetraspores, $\frac{7}{1}$.—Fig. 7: tetraspores seen through the surface of frond, $\frac{220}{1}$.—Fig. 8: tetraspores, $\frac{220}{1}$.—Fig. 9: cystocarps, $\frac{10}{1}$.—Fig. 10: vertical section of a cystocarp, $\frac{48}{1}$.

***Laurencia obtusa* (Huds.) Lamour.**

Nom. Jap.: *mitsude-sozo*.

PL. CXCIII.

Laurencia obtusa (Huds.) Lamour. Essai, p. 42; J. Ag. Sp. Alg. II, p. 750; Id. Epicr. p. 653; Harv. Phyc. Brit. t. 148; Kütz. Sp. Alg. p. 854; Id. Tab. Phyc. XV, t. 54-55; De Toni Syll. Alg. IV, p. 791; Hauck Meeresalg. p. 206.—*Fucus obtusus* Turn. Hist. Fuci t. 21.—Okam. Synop., 日本藻類名彙 (2nd. ed.) p. 69.

Fronds often forming somewhat intricate mass, cylindrical,

more than 0.5-1.5 mm thick, mostly branched pinnately in paniculate outline. Branches and branchlets alternate or opposite, here and there arising to 3 or more in almost verticillate manner, patent or almost horizontal. Ramuli cylindrical or clavate, truncated or almost round at apices, simple or longer ones again branched beneath their apices, 1-10 mm long and 300-900 μ thick, often triparted.—*Tetraspores* collected beneath a little thickened apex of ramuli. *Cystocarps* oval, sessile, sitting along the side of upper branches and branchlets. *Colour* dark purple, often fading to greenish or yellowish. *Substance* soft cartilaginous when recent, and the plant imperfectly adheres to paper in drying.

Hab.: On rocks between tide-marks often near high tide. Common along the warmer part of the country.

PL. CXCIII. Fig. 1-3: different forms of *Laurencia obtusa* (Huds.) Lamour. from different localities, $\frac{1}{1}$.—Fig. 4-5: portion of branch, magd., $\frac{10}{1}$, $\frac{5}{1}$, resp.—Fig. 6: cystocarp, $\frac{13}{1}$.—Fig. 7: tetrasporic branch, $\frac{1}{1}$.—Fig. 8: tetrasporic branch magd., $\frac{10}{1}$.

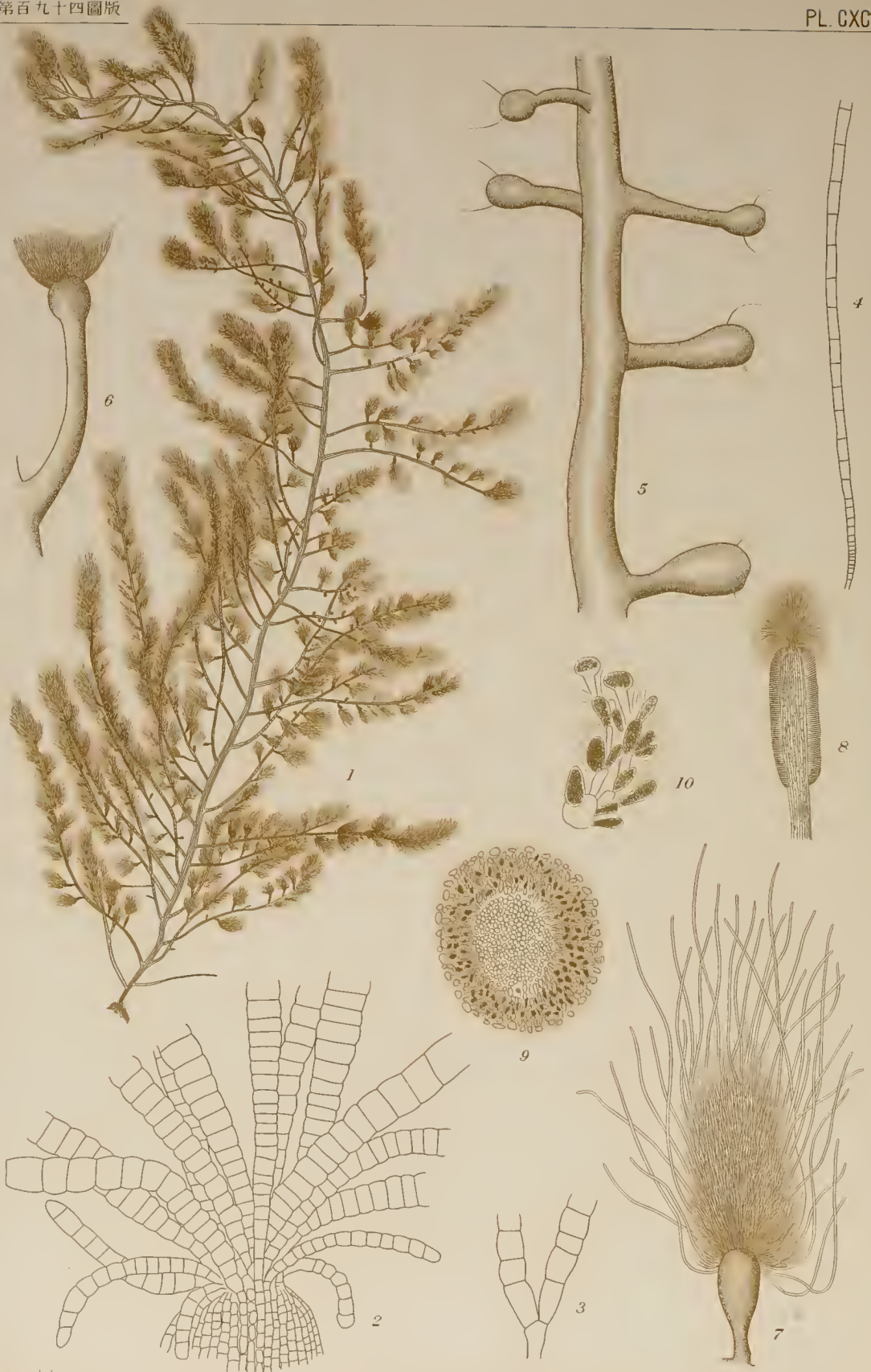
Sporochnus radiformis (R. Br.) C. Ag.

Nom. Jap.: *tamakeyari*.

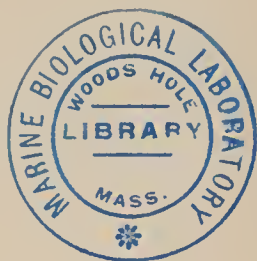
PL. CXCIV.

Sporochnus radiformis (R. Br.) C. Ag.; J. Ag. Sp. Alg. I, p. 157; Kütz. Sp. Alg. p. 568; Harv. Phyc. Austr. t. 225; De Toni Syll. Alg. III, p. 382; Yendo Notes on Algae new to Jap. V, p. 249.—*Fucus radiformis* R. Brown in Turn. Hist. Fuci t. 189.

Plants now before us not fully grown. *Root* a small conical disc covered with yellowish brown hairs. *Fron*d erect with a cylindrical percurrent stem, ca. 0.5 mm in diam., becoming gradually narrower upward, 15-20 cm high, pinnately branched on



Sporochnus radiformis (R.Br.) Ag. たまけやり





K. Okam, del.

Sporochneus scoparius Harv. けやり

all sides with alternate, simple, very patent branches. *Receptacles* globular or oblong, shortly stipitate, furnished with long penicillate hairs at apex, abruptly attenuated to pedicel. *Colour* olive-brown fading to greenish. *Substance* rigid when fresh, and the plant imperfectly adheres to paper in drying.

Hab.: On rocks in deep tide. Amakusa (5-7 fath., Mr. Higashi), Iyo and Higo.

PL. CXCV. Fig. 1: frond of *Sporochnus radiciformis* (R. Br.) C. Ag., $\frac{1}{1}$.—Fig. 2: apex of young receptacle with penicillate hairs in longitudinal section, $\frac{336}{1}$.—Fig. 3: base of penicillate hairs, showing some of them arising in dichotomy, $\frac{336}{1}$.—Fig. 4: apical hair showing its basal growth, $\frac{48}{1}$.—Fig. 5-7: receptacles in different stage of growth, $\frac{13}{1}$, $\frac{22}{1}$, $\frac{13}{1}$ resp.—Fig. 8: longitudinal section of receptacle, $\frac{22}{1}$.—Fig. 9: cross-section of receptacle, magd.—Fig. 10: two sporangiophores bearing sporangia, $\frac{220}{1}$.

***Sporochnus scoparius* Harv.**

Nom. Jap: *Keyari*.

PL. CXCV.

Sporochnus scoparius Harv. Phyc. Aust. t. 226; Kütz. Tab. Phyc. IX, t. 84, f. 1; De Toni Syll. Alg. IV, p. 383; Yendo Notes on Algae new to Jap. V, p. 249.—*Sp. herculeus* J. Ag.? in Okam. Synop., 日本藻類名彙 (2nd ed.) p. 161.

Root rather large conical disc covered with yellowish brown woolly hairs pretty above the disc. *Frond* robust, with a thick cylindrical, percurrent stem, densely branching pinnately on all sides in alternate manner, with simple elongated branches in our species. *Receptacles* oblong or clavate when fully grown, abruptly attenuated to pedicel which is 4-5 times long as receptacle (re-

ceptacle 1.5-7.5 mm long, and receptacle and pedicel taken together measure 7-9 mm in length, mostly 5 mm). *Colour* brown. *Substance* rigid and the plant when fully grown does not adhere to paper in drying.

Hab.: Misaki, Tosa, Kii, Shima, Suruga.

PL. CXCv. Fig. 1: fully grown frond of *Sporochneus scoparius* Harv., $\frac{1}{1}$.—Fig. 2-11: receptacles in different stages of growth, $\frac{13}{1}$; 2-5, taken from the frond shown in the fig. 1; 6-9, from another specimen; 10-11, from still another one; the upper part of branch above the portion marked *a* in fig. 10 matures to receptacle.

Ahnfeltia Fries 1835.

さいみ属

GIGARTINACEAE.

すぎのり科

體ハ圓柱狀、叉狀又ハ側面ヨリ分岐シ(時トシテハ不規則ニ)、角質ニシテ極メテ緻密ナル、小サキ細胞ヨリ成ル：皮層ハ極メテ小ナル細胞ノ表面ニ直角ニ絲狀ニ連ナレルモノヨリ成リ、漸次内層ニ移リ、内層ノ細胞ハ幾分大ク互ニ連絡點ヲ以テ連結シ、一定ノ順序ナク結合ス；寒天質ハ極メテ乏シク甚シク強靱ナリ。四分孢子及精子ハ詳ナラズ。囊果ハ枝ノ側面ニ疣狀ニ膨大シ、數多ノ小仁ヨリ成ル。

模範種ハ *A. plicata* (Huds) Fries ニシテ弘ク北半球ノ寒冷ノ海ニ分布シ、2-3 ノ他ノ種類ハ諸々ノ海ニ在リ。一屬ノ名ハ Ahnfelt 氏ノ名ニ依ル。一此屬ハすぎのり科ニ置カル、ト雖モ從來囊果ノ性質不明ナリシヨリ類縁明ナラザルモノトセラレ、構造ノ上ヨリ *Gymnogongrus* ニ近シトセラレタリ。予ハ今此屬ノ一二ノ種ヲ研究シテ其 *Gymnogongrus* 屬ト異ナル點唯僅ニ體ノ概ネ圓柱狀ナルコト(但シ扁平又ハ扁圓ノ部分モアリ)ヲ以テ其全ク扁平ナル *Gymnogongrus* 屬ト異ナリト考フルノミ；然レドモ本屬ノモノト雖モ全部圓柱狀ノミニアラザルヲ以テ此點ニ依テ二屬ヲ別ツノ至當ナルカ否ヤヲ疑フモノナリ；尙將來ノ研究ニ俟ントス。

Ahnfeltia concinna J. Ag.

さいみ

第 CXCI 圖版, 1-7 圖

體ハ簇生シテ廣キ區域ヲ蔽ヒ、直立、角質、稍圓柱狀、高サ 5-15 cm、直徑 1-2 mm ニシテ、基部ヨリ多少長キ間稍莖ノ如キ觀ヲ呈シ、時トシテハ全ク單條ニシテ枝ナキコトアリ、然レドモ通常ハ體ノ上部ノ方ニ 2-3 回叉狀ニ不規則ニ廣開シテ分岐シ、且ツ副枝ヲ存ス；副枝ハ往々相集リテ出デ或ハ偏在ス。各部ハ圓柱狀又ハ輕ク扁壓シ、往々グネグネト屈曲シ、銳角ノ腋ヲ以テ廣開ス。囊果ハ上部ノ枝ニ多數相接近シテ生ジ、少シク疣狀ニ

膨出ス。色ハ暗紫色又ハ帶綠色ニシテ乾燥スルトキハ黑色トナル。質ハ角ノ如ク硬ク、乾燥スルトキハ紙ニ附着セズ。

產地：潮線間ヨリ高潮線以上ニ及ベル岩石ニ簇生シ、附着層ノ高サハ6-8 尺ニ達ス。小笠原島、七島、房州、杣模、伊勢、豊後佐賀關。

分布：太平洋亞熱帶諸島；布哇、ペルー。

第 CXCI 圖版, 1-7 圖。1: *Ahnfeltia concinna* J. Ag., さいみ, ノ自然ノ態, $\frac{1}{1}$ 。—2-3: 囊果ヲ有スル乾燥標品, $\frac{1}{1}$ 。—4: 佐賀ノ關産ノ囊果ヲ有スルモノ(乾燥品), $\frac{1}{1}$ 。—5: 囊果ヲ有スル枝ノ横斷面, $\frac{48}{1}$ 。—6: 横斷面ノ一部, $\frac{83}{1}$ 。—7: 縦斷面ノ一部, $\frac{353}{1}$ 。

ながこのはのり, *Delesseria Middendorffii* Rupr.,

ノ四 胞子ヲ有スル葉。

第 CXCI 圖版, 8-11 圖

ながこのはのり, *Delesseria Middendorffii* Rupr., (第二卷, 第七集, 第 118-120 頁, 第 LXXXIV-LXXXV 圖版, 1-7 圖) ノ四分胞子ヲ熟スル成實葉ハ中肋ノ兩面ニ於テ其兩側ヨリ單獨ニ又ハ集リテ出デ、球狀, 卵形, 俵狀又ハ倒卵形ニシテ、厚ク、且輕ク扁壓シ、短柄ヲ有シ、時トシテハ縁邊ニ沿フテ翼狀片ヲ存シ、1.5-2.5 mm 長ク、1.5-2 mm ノ幅アリ。成實葉ヲ横斷スルトキハ中肋ノ兩面ニ於テ、始原ノ層即チ基礎ナル層ノ上下兩側ニ各二層ノ四分胞子層ヲ見ル。四分胞子ハ皮層ト始原ナル中層トノ中間ニ存スル皮層組織ノ細胞ヨリ形成セラル。

第 CXCI 圖版, 8-11 圖。8: ながこのはのり, *Delesseria Middendorffii* Rupr., ノ四分胞子ヲ熟スル成實葉ヲ有スル葉, $\frac{1}{1}$ 。—9: 同上ノ一部, $\frac{5}{1}$ 。—10: 成實葉ヲ縁邊ヨリ見タルモノ, 廓大—11: 成實葉ノ横斷面ノ半分, $\frac{48}{1}$ 。

Laurencia pinnatifida (Gm.) Lam.

はねそい 岡村 稱

第 CXCH 圖版

體ハ扁平盤狀ノ根ヲ以テ叢生シ、5-15 cm 高ク、基部殆ド圓柱狀、多少上方ニ扁壓シ、大部分ハ 1-4 mm ノ幅ヲ有シ、最末羽枝ニテ 0.5-1 mm ノ幅アリ、2-3 回羽狀ニ兩縁ヨリ互生ス。枝ハ略ボ線狀、往々基部ノ方ニ細ク或ハ少シク上方ニ廣ク、廣開シ、殆ド 45° ノ角度ヲ以テ立チ、枝端鈍圓又ハ分裂ス。枝ノ輪廓ハピラミツド狀ニシテ最下部ノ枝最モ長シ。最末羽枝ハ單條ニシテ線狀又ハ線狀-棍棒狀ヲナシ頂端ノ方ニハ截形又ハ少シク擴ガリ、往々數個ニ淺ク分裂ス。四分胞子ハ最末小枝ノ頂部ニ集リテ生ジ、其枝ハ特ニ形ヲ變ルコトナシ。囊果ハ卵形-壺狀ニシテ廣キ果口ヲ有シ、小羽枝ノ側面ニ座ス。色ハ暗紫紅色ニシテ往々褪色シテ帶綠黃色トナル。質ハ多肉ニシテ少時ニシテ軟化ス；體ハ乾燥スルトキハ可ナリ能ク紙ニ附着ス。

產地：低潮線以下ノ岩石ニ在リ。琉球ヨリ函館ニ到ル太平洋岸ニ普通ナリ又日本海沿岸ニモアリ。

分布：太西洋、地中海。

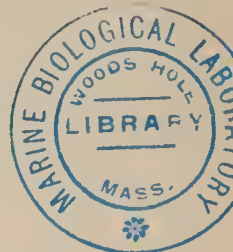
第 CXCH 圖版。1-3: *Laurencia pinnatifida* (Gm.) Lam. ノ體ノ種々ノ形態、 $\frac{1}{1}$ 。—4: 枝ノ横斷面、 $\frac{1}{1}$ 。—5: 枝ノ一部、 $\frac{7}{1}$ 。—6: 四分胞子ヲ有スル枝、 $\frac{7}{1}$ 。—7: 體ノ表面ヲ透シテ視タル四分胞子、 $\frac{220}{1}$ 。—8: 四分胞子、 $\frac{220}{1}$ 。—9: 囊果、 $\frac{10}{1}$ 。—10: 囊果ノ縦斷面、 $\frac{48}{1}$ 。

Laurencia obtusa (Huds.) Lamour.

みつでそい 岡村 稱

第 CXCH 圖版

體ハ往々稍錯綜シ、圓柱狀ニシテ、0.5-1.5 mm 以上太ク、多クハ羽狀ニ分岐シ、枝ハ複總狀ニシテピラミツド狀ノ輪廓ヲ有ス。枝及小枝ハ互生又ハ對生シ、其處此處ニ三ツヅ、若クハ三ツ以上出デ、殆ド輪生シ、廣開



シ又ハ略ボ水平ナリ。小枝ハ圓柱狀又ハ棍棒狀ニシテ、頂端截形又ハ略ボ圓ク、單條又ハ稍長キモノハ其頂端下ニ於テ再ビ分枝シ、1-10 mm 長ク、300-900 μ 太ク、往々三裂ス。四分胞子ハ小枝ノ少シク太クナリタル頂部ニ集ル。囊果ハ卵形、無柄ニシテ上部ノ枝及小枝ノ側面ニ座ス。色ハ暗紫色ニシテ往々帶綠若クハ帶黃色ニ變ズ。質ハ鮮ノ時ハ軟キ軟骨質ニシテ、乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：潮線間ノ岩石ニ生ジ、往々高潮線近ク存ス。邦内溫暖ノ海ニ普通ナリ。

分布：太西洋、地中海。

第 CXCH 圖版。1-3: *Laurencia obtusa* (Huds.) Lam., みつでそい、ノ諸所ノ産、 $\frac{1}{1}$ 。—4-5: 枝ノ一部、夫々 $\frac{10}{1}$, $\frac{5}{1}$ 。—6: 囊果、 $\frac{13}{1}$ 。—7: 四分胞子ヲ有スル枝、 $\frac{1}{1}$ 。—8: 四分胞子ヲ有スル枝ヲ廓大シタルモノ、 $\frac{10}{1}$ 。

Sporochnus C. Ag. 1817. けやり屬

SPOROCHNACEAE

けやり科

體ハ絲狀ニシテ各方面ニ規則正シク分岐シ、多クハ明ニ長條枝ト短條枝トノ區別ヲ存ス。短條枝ハ後ニ實ヲ熟スルニ到リ、實ハ圓柱狀又ハ棍棒狀乃至橢圓狀又ハ畧ボ球狀ナリ。子囊托ハ短クシテ、僅少ノ關節ヨリ成リ、多少分岐シ、其ノ枝ハ棍棒狀ニシテ頂細胞ハ圓ク、子囊ハ枝ノ側面ニ平等ニ附着シ、實ヲ熟シタル短條枝ノ周圍ニ密集シテ其頂端ヨリ毛茸ノ束ヲ生ジ、短條枝ハ之ガ爲ニ圓柱狀又ハ棍棒狀等ノ實ヲ形成スルニ至ル。

約 13 種アリテ多數ハオーストラリアノ海ニ産シ、二三太西洋及地中海等ニ産ス。一屬ノ名ハ Spora (胞子) ト chnous (毛) トヨリ成ル。

Sporochnus radiformis (R. Br.) C. Ag.

たまけやり 岡村 稱

第 CXCV 圖版

今予ノ有スル標本ハ未ダ充分成長シタルモノニアラズ。根ハ小サキ圓

錐狀根ニシテ帶黃褐色ノ毛ヲ以テ蔽ハル。體ハ直立シ、圓柱狀ノ莖ヲ有シ、莖ハ直通シ、直徑約 0.5 mm, 漸次上方ニ細ク、15-20 cm 高ク、各方面ニ羽狀ニ分岐シ、枝ハ單條ニシテ互生シ、甚シク廣開ス。實ハ球狀又ハ長橢圓狀ニシテ短柄ヲ有シ、頂端ニ長キ毛茸ヲ叢生シ下部急ニ柄トナル。色ハオリーブ褐色ニシテ、往々綠色トナル。質ハ鮮時ハ硬クシテ體ハ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地：潮線下ノ岩石ニ生ズ。天草島（5-7 尋，東氏），伊豫及肥後。

分布：ニウフホルランド。

第 CXCIV 圖版。1: *Sporochnus radiformis* (R. Br.) C. Ag., たまけやり、ノ體、 $\frac{1}{1}$ 。—2: 若キ實アル短條枝ノ縱斷ニシテ頂端ニ毛茸ヲ存スルモノ、 $\frac{336}{1}$ 。—3: 毛茸ノ基部ニシテ其叉狀ヲナシテ出ルモノアルコトヲ示ス、 $\frac{336}{1}$ 。—4: 一條ノ毛ノ基部分裂シテ伸長スルコトヲ示ス、 $\frac{48}{1}$ 。—5-7: 實ノ種々ノ成長度ニアルモノ夫々、 $\frac{13}{1}$, $\frac{22}{1}$, $\frac{13}{1}$ 。—8: 實ノ縱斷、 $\frac{22}{1}$ 。—9: 實ノ橫斷、廓大。—10: 二個ノ孢子托、 $\frac{220}{1}$ 。

***Sporochnus scoparius* Harv.**

け や り 岡 村 稱

第 CXCV 圖版

根ハ可ナリ大ナル圓錐狀盤ニシテ黃褐色ノ毛茸ヲ以テ蔽ハレ、毛ハ根ノ可ナリ上部ニ達ス。體ハ強大ニシテ太キ圓柱狀ノ直通セル莖ヲ有シ、密ニ各方面ニ羽狀ニ分岐シ枝ハ互生ニシテ、現在スル標本ニテハ、長クシテ單條ナリ。實ハ充分成長スルトキハ長橢圓形又ハ棍棒狀ヲナシ急ニ細クナリテ柄トナリ、柄ノ長サハ實ノ長サノ 4-5 倍ナリ（實ノ長サハ 1.5-7.5 mm. ニシテ、實ト柄ト一緒ニシテ 7-9 mm. アリ、多數ハ 5 mm ナリ）。色ハ褐色。質ハ硬ク、乾燥スルトキハ體ハ紙ニ附着セズ。

產地：相模三崎，土佐，紀伊，志摩，駿河。

分布：オーストラリア。

第 CXCV 圖版。i: 充分成長シタル *Sporochnus scoparius* Harv., けやり

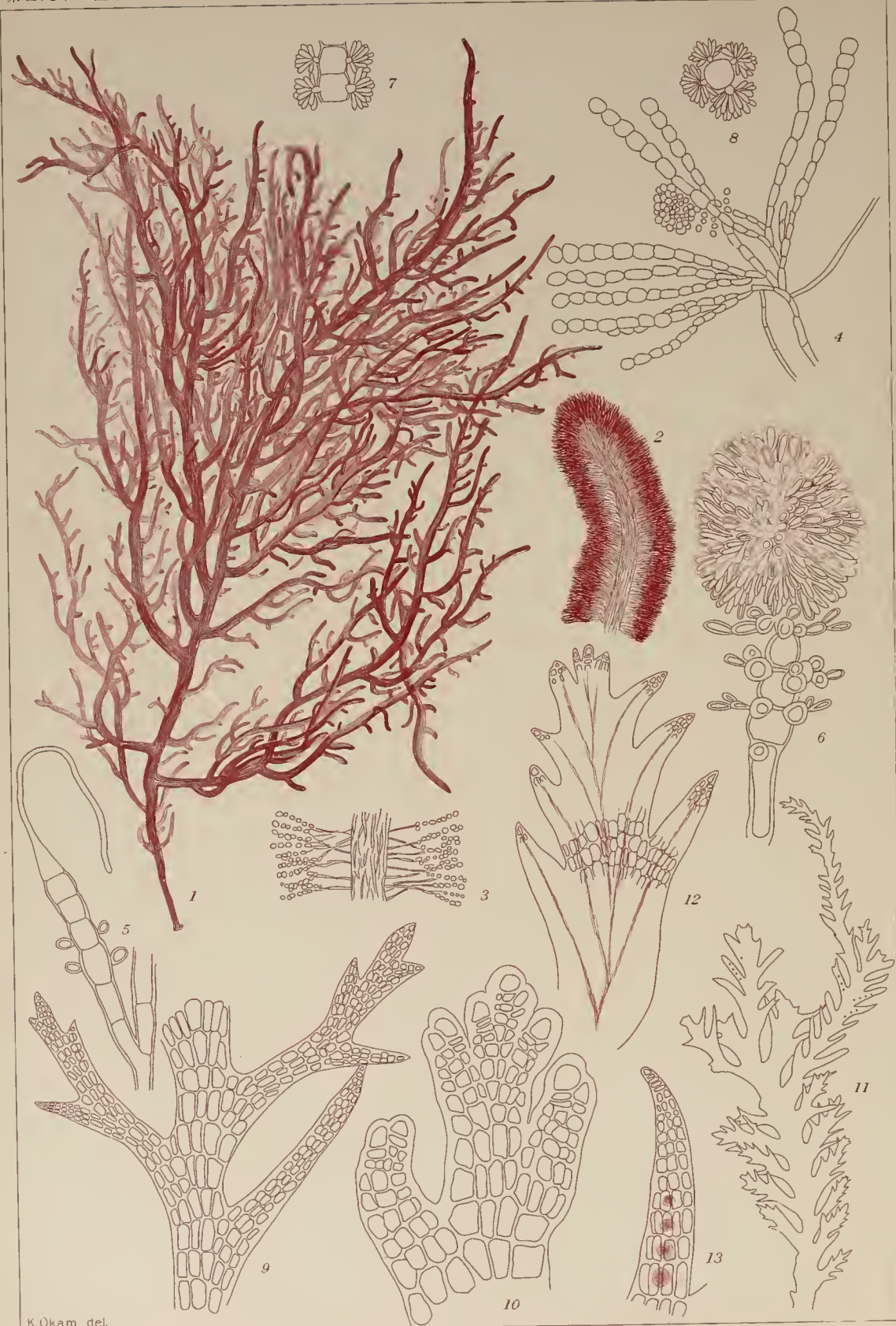
ノ體, $\frac{1}{1}$.—2-11: 實ノ種々ノ大サト形狀, $\frac{12}{1}$; 2-5, I 圖ニ示シタル體ヨリ
寫ス; 6-9, 他ノ標品ヨリ; 10-11, 又別ノ標品ヨリ; 10 圖ノ a ト印シタ
ル部分ヨリ上部ハ實トナルコトヲ示ス。





K Okam del

Odonthalia ochotensis (Rupr.) J.Ag. のぶばのこぎりひば Fig. 1-6.
Symphyocladia pennata Okam. ひめこぎね Fig. 7-9.



K. Okam. del.

Trichogloea lubricum (Harv.) J. Ag. あけぼのもづく Fig. 1-8.
Symphyocladia pennata Okam. ひめこざね Fig. 9-13.

***Odonthalia ochotensis* (Rupr.) J. Ag.**

Nom. Jap. : *Shinobuba-nokogirihiba*.

PL. CXCVI, Fig. 1-6.

Odonthalia ochotensis (Rupr.) J. Ag. Sp. Alg. II, p. 897; De Toni Syll. Alg. IV, p. 1140.—*Atomaria ochotensis* Rupr. Alg. Ochot. p. 20 (212), tab. 9.

Fronde coespitose, rising from a common scutate disc (?), flat, linear, alternately decompound-pinnate, distichous, thickened below into sub-cylindrical stem, soon complanated above; in the lower portion of frond margins are rough by remains of dropped branches. In older frond the lower portion is transformed into a thick cylindrical stem, and the plant attains the height of 20-30 cm. Rachis scarcely exceeding 1 mm. in breadth, evidently provided with midrib and marginated, gradually becoming a little broader and more membranaceous upward, 1.5-2 mm. in breadth. Midrib becomes prominent by evolution of cortical layers almost occupying the median portion of branch and very gently flexuose. Pinnæ arise from margin, and similarly shaped pinnæ also proliferated from margins are attenuated at the base in young stage, but when fully grown become almost equally broad. Sterile ones are elongated, while fertile ones more contracted, more flabellate and all stand erecto-patent. Pinnulae dentiform or elongated, in some almost subulate, slightly incurved in upper ones.—*Stichidia* formed in terminal or lateral pinnæ, flabellato-corymbose, pinnato-fasciculated, each provided or not provided with a short pedicel, linear-lanceolate, slightly contracted at every articulation, containing double row of tetraspores that is with two oppositely placed tetraspores in a single articulation. *Cystocarps* obliquely situated beneath the apex of pinnule and calcalated,

PL. CXCVI—CC, March, 1923

ovato-urceolate, somewhat contracted at orifice. *Colour* fuscous. *Substance* membranaceous and the plant does not adhere to paper in drying.

Hab.: Kabafuto, Shumushu, Urupp; Robben Island.

PL. CXCVI, fig. 1-6. Fig. 1: frond of *Odonthalia ochotensis* (Rupr.) J. Ag., $\frac{1}{1}$.—Fig. 2: portion of frond, $\frac{1}{1}$.—Fig. 3: upper sterile portion of cystocarpic frond, $\frac{13}{1}$.—Fig. 4-5: tetrasporic ramuli, one slightly attenuated below, the other not; 4: $\frac{34}{1}$, 5: $\frac{13}{1}$.—Fig. 6: cystocarp, slightly magd.

Symphyocladia pennata Okam. Sp. nov.

Nom. Jap.: *Himé-kozané*.

PL. CXCVI, Fig. 7-9; PL. CXCVII, Fig. 9-13.

Pterosiphonia parasitica (non Fkbg.) Yendo Notes on Alg. New to Jap. VIII. (Bot. Mag. Tokyo Vol. 32, 1928, p. 78).

*Fronde*s dwarf, filiform, creeping or erect, standing from basal creeping portion where the plant adheres to other algae by emitting root fibres from the under-surface, thoroughly ecorticated, alternato-pinnately decompound, with patent or widely parted branches densely arising near to each other. Longer shoots pinnately branched in disticho-alternate manner with broader or slenderer, shorter or longer laciniae, or with sooner or later limited similarly pinnated short lateral branches. Laciniae grow together in more or less congenital manner; in adult ones each lacinia furnished with isolated, well-defined single apical cell, while in younger ones 2 or 3 apical cells are seen growing in a congenital manner as shown in PL. CXCVII, fig. 10 and older stunted branches on the basal portion of frond is often much expanded with flabellately running midribs (fig. 12). Monosiphonous hairs entirely wanting.

—*Tetraspores* formed in the lacininae of the upper segment in one longitudinal row. *Colour* vinoso-red. *Substance* membranaceous and the plant does not adhere to paper in drying.

Hab.: on the frond of other algae, Noh (Prov. Echigo).

The present plant has been identified by late Prof. Yendo as *Pterosiphonia parasitica* Fkbg. It has a very close external appearance of *Pterosiphonia*, but as the congenital nature of apical portion of branches, especially of younger ones, tells its difference from that genus, it should be better to put the plant in question in *Symphyocladia*.

Of all the species of *Symphyocladia* known in this country the present plant stands very near by *S. linearis* Okam. which differs by having very much elongated fronds. With exception of the difference of size the two plants resemble in having much separated laciniae. On the other hand, the plant in question has an appearance very closely resembling the narrower form of *S. marchantioides* (Harv.) Fkbg., from which however it differs in having much separated laciniae.

Taking into consideration that the water of the Japan Sea is always a little colder than that of the Pacific of this country and that the plant of one and the same species often takes much a different form and appearance in the both waters, I am in doubt whether the present plant is not a dwarf variety of *S. linearis* Okam. or a narrower form of *S. marchantioides*. But at present I refer it provisionally as a new species.

Pl. CXCVI, fig. 7-9. Fig. 7: two fronds of *Symphyocladia pennata* Okam. from Noh, $\frac{1}{1}$.—Fig. 8: terminal segments of creeping portion, $\frac{83}{1}$.—Fig. 9: portion of frond, $\frac{8}{1}$.

Pl. CXCVII, fig. 9-13: Fig. 9: portion of branch, $\frac{83}{1}$.—Fig. 10: apical cells of congenital ramuli, $\frac{353}{1}$.—Fig. 11: tetrasporic

branch, $\frac{13}{1}$.—Fig. 12: portion of fig. 11, to show congenital growth of ramuli, $\frac{83}{1}$.—Fig. 13: tetrasporic laciniae, $\frac{83}{1}$.

Trichogloea lubrica (Harv.) J. Ag.

Nom. Jap.: *Akebonomozuku*.

PL. CXCvII, Fig. 1-8.

Trichogloea lubrica (Harv.) J. Ag. Epicr. p. 514; Id. Till Alg. Syst. XI, p. 41; De Toni Syll. Alg. IV, p. 77.—*Helminthocladia Cassei* Crouan in Mazé and Schramm Alg. Guadel. p. 177.

Root a small soft disc. *Frond* mostly simple, filiform or cylindrical, weak, tapering at base, pinnately branched decompound, in irregularly alternate manner. Main stem mostly simple or parted, closely set through its whole length with patent branches equally thick as stem, scarcely 1.5 mm. in thickness with thinly encrustated axis whose diameter is much less than the thickness of peripheral layer. Branches worm-like, usually not attenuated at base, tapering to a slender apex, loaded with lateral simple or forked patent branchlets with longer or shorter ones mixed.—*Cystocarps* dot-like, situated in the peripheral layer and consist of a globular mass of spores. *Colour* beautiful red soon fading in freshwater. *Substance* soft, gelatinoso-mucose, lubricous and the plant closely adheres to paper in drying.

Hab.: on rocks between tide-marks near low tide. Ryukyu (Harv.), Nomo-zaki, Hachijo-Shima.

PL. CXCvII, fig. 1-8. Fig. 1: frond of *Trichogloea lubrica* (Harv.) J. Ag. from Hachijo, $\frac{1}{1}$.—Fig. 2: optic longitudinal section of frond, $\frac{22}{1}$.—Fig. 3: portion of the longitudinal section of frond, $\frac{45}{1}$.—Fig. 4: cystocarp and peripheral filament, $\frac{220}{1}$.—Fig.



K. Okam, del.

Plocamium costatum Hook. et Harv. きざみゆかり Fig.1-4.
Dasyphila plumarioides Yendo. おきしのぶ Fig.5-11.
Gelidium crinale (Turn.) Lamour. f. *latifolium* n.f. いとてんぐさ新形 Fig.12.

5: procarp (trichogyne is not bent in natural state), $\frac{567}{1}$.—Fig. 7-8: portion of longitudinal and cross sections of cystocarp, diagrammatic.

Plocamium costatum (J. Ag.) Hook. et Harv.

Nom. Jap.: *Kizami-yukari*.

PL. CXCVIII, Fig. 1-4.

Plocamium costatum (J. Ag.) Hook. et Harv.; Yendo Notes on Algae New to Jap. VIII, (Bot. Mag. Tokyo, vol XXXII, n. 376, p. 68, 1918); Harv. Ner. Aust. p. 122 partim; Kg. Sp. Alg. p. 886; Id. Tab. Phyc. vol. XVI, t. 52, f. *d-e*; J. Ag. Sp. Alg. II, p. 403; Id. Epicr. p. 344; De Toni Syll. Alg. IV, p. 597.

Only one specimen now before us. *Fronde* flat, linear, thin membranaceous, about 7 cm. high, scarcely 1 mm. broad, gently flexuose. Branches distichous, 2-4 times decompound pinnate, alternate and erecto-patent, the lower ones longer than the upper and gradually becoming shorter above, so that the outline is somewhat corymbose; they are thought alternate in geminate manner (*i. e.* two on one side and as many on the other), of which the lower one is always simple, while the upper decompound; the simple one 2-3 mm. long, tapering to a fine point from broader base, widely parted in lower or middle ones, and more or less incurved in upper ones. The lower simple lacina of geminate ones furnished with microscopically minute teeth-like serrations along the outer margin.—*Sporophylls* forming divaricato-dichotome stellate clusters provided with a short pedicel composed of sub lanceolate or linear ramuli, which is transformed from lacinulae.

Hab.: Kōtōsho (Taiwan).

Our plant seems to differ from the typical one in not having the midrib and basal stem-like portion. Habit, texture and mode of branching are very similar to *Pl. abnorme* H. et H. (Pl. CI of the present Icones), only differing in having serrated margin on the outer side of the simple lacina of geminate ones. The plant now in consideration may probably be a form which grows on the northernmost limit of the distribution of the present species and as consequence having much smaller size, thin, fine and membranaceous texture, and the midrib invisible or not manifest. A hybrid of *Pl. abnorme* and *Pl. costatum*?

Pl. CXCVIII, fig. 1-4. Fig. 1: frond of *Plocamium costatum* H. et H., $\frac{1}{1}$.—Fig. 2: upper portion of branch, $\frac{22}{1}$.—Fig. 3: sporophylls, $\frac{48}{1}$.—Fig. 4: sporophyll; *b*, pedicel, $\frac{48}{1}$.

***Dasyphila plumarioides* Yendo.**

Nom. Jap.: *Okishinobu*.

PL. CXCVIII, Fig. 5-11.

Dasyphila plumarioides Yendo Nov. Alg. Jap. Decas I-III (Bot. Mag. Tokyo Vol. 34, p. 7, 1920).

Frond filiform, little thickening below to subcylindrical stem, gradually compressed upward, irregularly alternately decompound with patent branches, expanding in a subflabellate manner. Branches are loaded with elegant pinnae (*k, k* in fig. 10-11). Pinnae which arise in opposite manner sooner or later make limited growth and are callithamnioid that is consist of single row of cells. They are alternately pinnulated with pinnulae arising from every articulation of the rachis. One of pinnae standing opposite may grow up into branch (*L, L* in fig. 10-11) and branch usually arises from every second node (*i.e.*, intervening a pair of



K. Okam. del.

Homoeostrichus Sinclairii (Het H.) J. Ag. やぶれあふぎ Fig. 1-4.
Desmarestia aculeata (L.) Lamour. とげうるしぐさ Fig. 5-9.

pinnac) (fig. 10); but this rule is often disturbed, there being some irregularities so as to intervene one or three articulations (fig. 11 *a, b*). On the surface of branches two weakly developed moniliform filaments or hairs are seen at articulations (fig. 7). That these hairs are really simple moniliform branch consisting of 2-4 articulations and remaining in non-developing state is seen in a very young branch which is composed of simple moniliform row of cells and still having no cortical cell (fig. 6). On the cross-section of branch a large central axis is seen surrounded by 6 larger cells, two of which standing at frank side give rise to pinnac and other remain either undeveloped or grow to simple moniliform hair-like branch consisting of a few articulations. Cortical layer is produced as rhizoid-cells arising from the basal cell of lateral branches (fig. 6).—*Tetraspores* produced on the terminal cell of pinnule, roundish, tripartite.

Hab.: Kōtōsho (Taiwan).

Pl. CXC VIII, fig. 5-11. Fig. 5: frond of *Dasyphila plumarioides* Yendo, $\frac{1}{1}$.—Fig. 6: young shoot, $\frac{353}{1}$.—Fig. 7: pinnac and moniliform branches, $\frac{220}{1}$.—Fig. 8: one of pinnac, $\frac{353}{1}$.—Fig. 9: cross-section of branch, $\frac{220}{1}$.—Fig. 10-11: diagrammatic illustrations of mode of branching; *l*, non-limited branch; *k, k* limited branches or pinnac.

Gelidium crinale (Turn.) Lamour. f. *latifolium* n. f.

Nom. Jap.: *Itotengusa*.

Pl. CXC VIII, Fig. 12.

Fronds linear, erect, standing from creeping and rooting stolon, filiform and naked below, 5-6 cm. long, dilating to narrow-linear segments; 1-1.5 mm. broad which give rise to slender similar-shaped linear branches irregularly arising in alternate,

clustered or scattered manner. They are gradually or abruptly tapering toward their bases and end in blunt apices.

Hab.: on shallow place at Kamakura (Higashi).

A form distinguished from the typical form by having a rather broader narrow-linear segments.

Pl. CXCVIII, fig. 12: frond of *Gelidium crinale* (Turn.) Lamour.
f. *latifolium* n. f., $\frac{1}{1}$.

Homoeostrichus Sinclairii (H. et H.) J. Ag.

'Nom. Jap.: *Yabure-ōgi*.

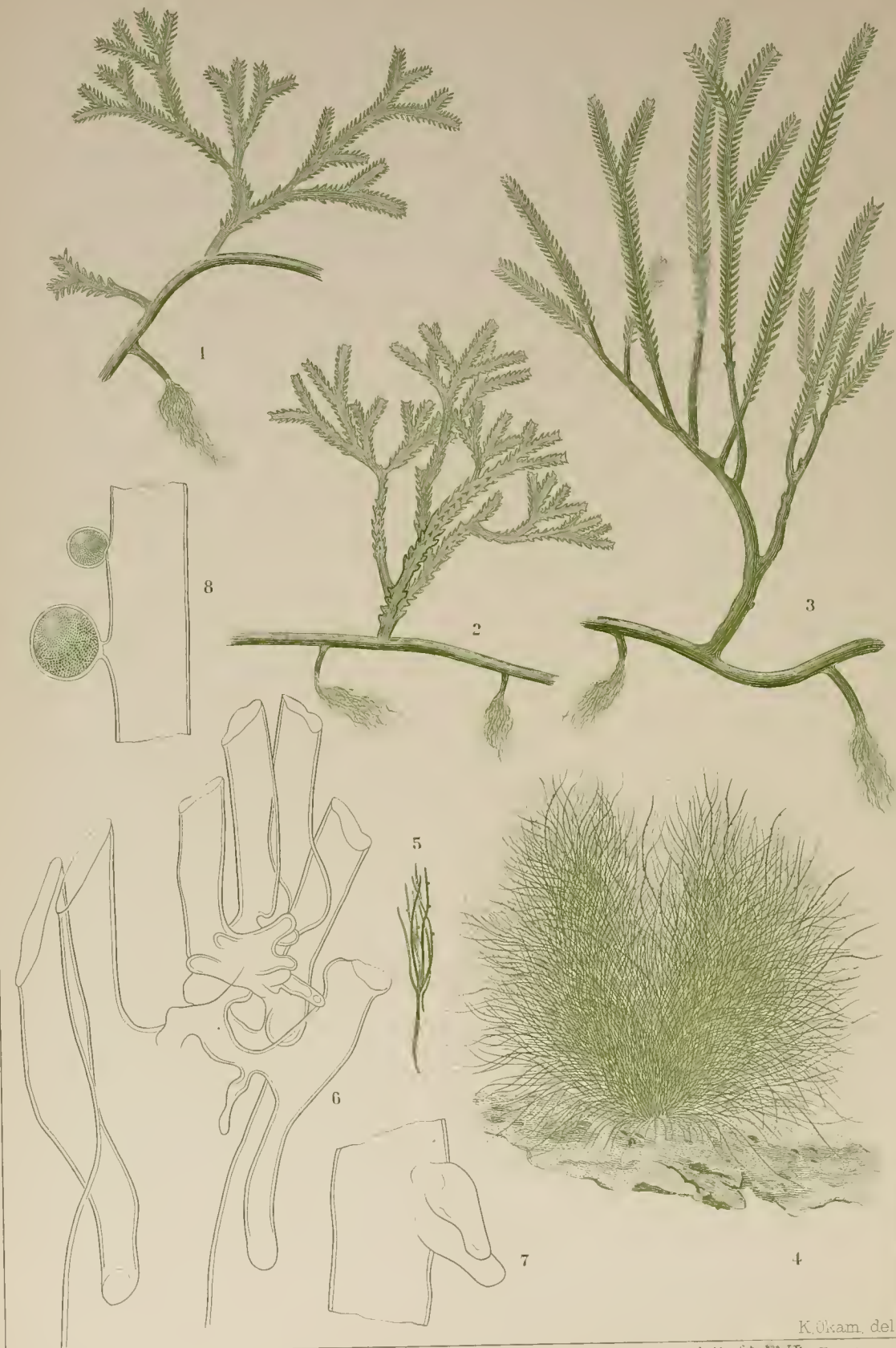
Pl. CXCIX, Fig. 1-4.

Homoeostrichus Sinclairii (H. et H.) J. Ag. Anal. Alg. Cont. I, p. 15; De Toni Syll. Alg. III, p. 236.—*Zonaria Sinclairii* Harv. Phyc. Aust. t. 49; J. Ag. Sp. I, p. 111; Id. Till Alg. Syst. II, p. 50.—*Phycopteris Sinclairii* Kg. Tab. Phyc. IX, t. 68, f. 2.—*Stypopodium Sinclairii* Kg. Sp. p. 564.

Fronds erect standing from stupose conical disc, parted below into elongated stupose or naked slender segments which expand at apices into narrower or broader more or less clefted cuneate lamina. The lower portion of frond sometimes is for the most part thickly stupose. Lamina cuneate, long attenuated below into slender petiole, simple and entire or subpinnately or radially clefted. Stupose filaments are emitted from the cells of external layer of frond.

Hab.: Ryukyu.

Pl. CXCIX, fig. 1-4. Fig. 1: frond of *Homoeostrichus Sinclairii* (H. et H.) J. Ag., $\frac{1}{1}$.—Fig. 2: cross-section of frond, $\frac{33}{1}$.—Fig. 3: portion of cross-section of frond, $\frac{353}{1}$.—Fig. 4: stupose hairs, $\frac{83}{1}$.



K. Okam. del.

Caulerpa Freycinetii C. Ag. var. *pectinata* Web. v. Bos. よれづた変種 Fig. 1.
C. cupressoides C. Ag. var. *typica* Web. v. Bos. びやくしんづた変種 Fig. 2.
C. cupressoides C. Ag. var. *lycopodioides* f. *elegans* Web. v. Bos. びやくしんづた変種 Fig. 3.
Derbesia Lamourouxii (J. Ag.) Solier. つゆのいと Fig. 4-8.

Desmarestia aculeata (L.) Lamour.

Nom. Jap.: *Togé-urushigusa*.

PL. CXCIX, Fig. 5-9.

Desmarestia aculeata (L.) Lam. Essai p. 25; Harv. Phyc. Brit., t. 49; Kg. Sp. p. 571; Kg. Tab. Phyc. IX, t. 94; De Toni Syll. Alg. III, p. 459.—*Fucus aculeatus* Turn. Fuci t. 187.

Root a small scutate disc. *Fronde* high, linear, filiform, with subcylindrical stem, compressed, coriaceous, percursed with immersed midrib, densely decompound-pinnate in a distichous alternate manner, with ultimate pinnulae spinulose or subulate. Margin of main branches often armed with small blunt dot-like protuberances after decaying of marginal spinules. *Colour* dark brown. *Substance* coriaceous and the plant does not adhere to paper in drying.

Hab.: Kabafuto.

PL. CXCIX, fig. 5-9. Fig. 5: frond of *Desmarestia aculeata* (L.) Lam., $\frac{1}{1}$.—Fig. 6-7: *a*, branch; *b*, part of *a*, magd. $\frac{7}{1}$.—Fig. 8: branch with broader segments, $\frac{1}{1}$.—fig. 9: portion of older branch, magd.

Caulerpa Freycinetii C. Ag. var. **pectinata** Web. v. Bos.

Nom. Jap.: *Yoré-dzuta*.

PL. CC, Fig. 1.

Caul. Freycinetii C. Ag. var. *pectinata* Web. v. Bos. Monog. Caul., p. 316, pl. xxvi, fig. 3-6.

Stolon generally robust, cylindrical, creeping and naked. *Fronde* cylindrical or somewhat compressed at basal portion, soon

complanated above, linear, dichotomous, not torted, not narrowed and dilated, with proliferations, distichously pectinated along margins. Teeth short and fine, arising near to each other.

Hab.: Kishyu.

Pl. CC, fig. 1: portion of frond of *Caulerpa Freycintii* C. Ag. var. *pectinata* Web. v. Bos. in nat. size.

***Caulerpa cupressoides* C. Ag. var. *typica* Web. v. Bos.**

Nom. Jap.: *Biakushin-dzuta*.

PL. CC, Fig. 2.

Caulerpa cupressoides C. Ag. var. *typica* Web. v. Bos. Monog. Caul. p. 327, Pl. XXVII, fig. 1-3; Pl. XXVIII, fig. 1.

Only one specimen now before us. *Stolon* thick, cylindrical and naked. *Frond* cylindrical at base, complanated above. Ramenta distichous, here and there tristichously arranged, sub-naviculoid, short, erect or slightly spreading.

Hab.: Kishyu.

Pl. CC, fig. 2: portion of frond of *Caulerpa cupressoides* C. Ag. var. *typica* Web. v. Bos., $\frac{1}{4}$.

***Caulerpa cupressoides* C. Ag. var. *lycopodioides*
f. *elegans* Web. v. Bos.**

Nom. Jap.: *Biakushin-dzuta*.

PL. CC, Fig. 3.

Caulerpa cupressoides C. Ag. var. *lycopodioides* f. *elegans*. Web. v. Bos. Monog. Caul. p. 335, Pl. XXVII, fig. 8-13; Pl. XXVIII, fig. 10-12, 14.

Stolon thick and robust, raked and cylindrical. Aerial shoots high, cylindrical and thick below, branched, with branches naked at base. Ramenta distichous, subnaviculoid, 2-3 times long as the breadth of rachis.

Hab.: Kishyu.

Pl. CC, fig. 3: portion of frond of *Caul. cupressoides* C. Ag. var. *lycopodioides* f. *elegans* Web.v. Bos. in nat. size.

Derbesia Lamourouxii (J. Ag.) Solier.

Nom. Jap.: *Tsuyu-no-ito*.

Pl. CC, Fig. 4-8.

Derbesia Lamourouxii (J. Ag.) Solier In Ann. Sc. nat., 1848, p. 162, t. 9; Hauck Meeresalg. p. 476; De Toni Syll. Alg. I. p. 424.—*Bryopsis Balbisiana* Lam. Essai p. 66, t. 7, f. 2; Kg. Sp. p. 490.—*Bryop. Balbisiana* var. *interrupta* Kg. Tab. Phyc. VI, t. 74, f. 2.—*Bryop. dalmatica* (*Bryop. adriatica*) Kg. Tab. Phy. VI, p. 26, t. 74, f. 1.

Fronds filamentous, capillary-form, densely tufted forming a globular mass, 5-6 cm. high. Filaments 170-615 μ thick (in herbarial form), rooting at lower portions, naked and almost simple or irregularly put forth minute branches. *Zoosporangia* globular, ca. 350 μ in diameter, sessile (or with a short and delicate pedicel), single or many formed near together or subsecund.

Hab.: Kishyu.

Pl. CC, fig. 4-8. Fig. 4: tuft of *Derbesia Lamourouxii* (J. Ag.) Sol., $\frac{1}{1}$.—Fig. 5: branch bearing sporangia, $\frac{1}{1}$.—Fig. 6: rhizoids emitted from upper segments, $\frac{48}{1}$.—Fig 8: sporangia, $\frac{48}{1}$.

Odonthalia ochotensis* (Rupr.) J. Ag.

しのぶばのこぎりひば

岡村 稱

第 CXCVI 圖版, 1-6 圖

體ハ叢生シ、共同ノ扁平盤狀根(?) ヨリ立チ、扁平、線狀ニシテ複羽狀ニ互生シ、兩緣ヨリ枝ヲ分チ、下部 稍圓柱狀ノ莖トナリ、上部 直ニ扁壓ス；體ノ下部ノ兩緣ハ枝ノ落チタル痕ノ爲ニ粗クナレリ。老成セル體ノ下部ハ太キ圓柱狀ノ莖トナリ高サ 20-30 cm ニ達ス。枝ノ幅ハ辛フジテ 1 mm. ニシテ明ニ中肋ヲ存シ、中肋ノ左右ハ薄キ膜狀ヲナシ、漸次上方ニ一際扁平トナリ且ツ少シク廣クシテ幅 1-2 mm トナル。中肋ハ皮層組織ノ増厚スル爲メ隆起シ、殆ド中央ヲ占メ、極メテ微ニ雁木狀ニ屈曲ス。羽狀枝ハ枝ノ兩緣ヨリ出デ、縁邊ヨリ亦同様ノ枝ノ副出スルモノアリテ、始メハ基部ノ方ニ細ケレドモ、充分成長スルトキハ各部略ボ同様ノ幅トナル。實ヲ熟スルニ到ラザル羽狀枝ハ長ク挺伸スレドモ實ヲ有スルモノハ短ク止リ扇狀ニシテ總テ直立様ニ廣開ス。小羽枝ハ齒狀ヲナシ又ハ少シク長ク伸び、或者ニテハ殆ド錐狀ヲナシ其上部 少シク内方ニ屈曲ス。四分胞子托ハ頂端附近ノ羽狀枝若クハ側面ヨリ出ル羽枝ニ形成セラレ、扇狀—繖房狀ヲナシ、羽狀ニ分レ枝皆束狀ニ相集リ、各短キ柄ヲ有スルカ或ハ有セズシテ細キ披針狀ヲナシ、各節部ニ於テ輕ククビレ、二列ノ胞子ヲ藏ス；即チ各節間ニ 2 個宛相對シテ胞子ヲ藏ス。囊果ハ小羽枝ノ頂端ノ下ニ斜ニ坐シ距狀部ヲ存ス；囊果ハ卵形ノ壺狀ニシテ口部稍狹シ。色ハ黒味ヲ帶ビタル紅褐色ナリ。質ハ膜質ニシテ乾燥スルトキハ紙ニ附着セズ。

產地：樺太，占守，根撫。 ロッペン島。

第 CXCVI 圖版, 1-6 圖。 1: *Odonthalia ochotensis* (Rupr.) J. Ag., しのぶばのこぎりひば、ノ體、 $\frac{1}{1}$ 。—2: 體ノ一部、 $\frac{1}{1}$ 。—3: 囊果ヲ有スル體ノ上部ノ實ナキ部分、 $\frac{13}{1}$ 。—4-5: 四分胞子ヲ有スル小枝、一ハ下部少シク細ク、一ハ然ラズ；4: $\frac{34}{1}$, 5: $\frac{13}{1}$ 。—6: 囊果、廓大。

Symphyocladia pennata Okam. 新種 †

ひ め こ ざ ね

岡 村 稔

第 CXCVI 圖版, 7-9 圖, 第 CXCVII 圖版, 9-13 圖

體ハ矮小, 絲狀, 匍匐シ又ハ直立シ, 下部ノ匍匐スル部分ヨリ立ち, 其匍匐スル部分ニテ體ノ裏面ヨリ絲狀根ヲ出シテ他ノ海藻ニ附着シ, 全部皮層ヲ被ムルコトナシ; 枝ハ複羽狀ニ互生シ, 廣開シ, 密ニ互ニ相接近シテ出ヅ. 長キ枝ハ兩縁ヨリ羽狀ニ互生ニ分岐シ, 幅廣キ又ハ狹キ, 短キ又ハ長キ齒狀枝ヲ有シ, 又ハ他ノ部ト同様ニ羽狀ヲナセル短キ枝ヲ出ス, 其枝ハ早晚其伸長ニ限リアルモノトス. 齒狀枝ハ相隣接スル縁邊ヲ以テ多少癒着シ, 充分成長シタルモノニ於テハ其各齒片一々分離シテ能ク判明セル一個ノ頂細胞ヲ存スレドモ幼者ニアリテハ 2-3 個ノ頂細胞ハ 第百九十七圖版第 10 圖ニ示ス如ク癒合シテ存ス而シテ體ノ基部ニ在ル老キイジケタル枝ハ往々幅廣クナリ數條ノ扇狀ニ走レル中肋ヲ存ス (12 圖). 單管狀ノ毛ハ全ク缺如ス. 四分胞子ハ上部ノ枝ノ齒狀枝ニ縱ニ一列ニ形成セラル. 色ハ葡萄酒紅. 質ハ薄キ膜質ニシテ乾燥スルトキハ紙ニ附着セズ.

產地: 越後能生, 他ノ海藻上ニアリ.

遠藤博士ハ曩ニ本植物ヲ *Pterosiphonia parasitica* Fkbg. (植物學雜誌, 三十二卷, 78 頁) トシテ發表セリ; 如何ニモ外見ハ夫ニ酷似スレドモ枝ノ頂端部ノ互ニ癒合スルコト, 特ニ幼キ枝ニ於テ著シク明ニシテ, 此點ヲ以テ該屬ト異ナルコト瞭然タリ; 故ニ寧ロ *Symphyocladia* ニ配スルヲ至當トス. 從來知ラレタル *Symphyocladia* ノ種類中本植物ハ *S. linearis* Okam. ニ近シト雖モ其種ハ極メテ長ク伸ビタル體ヲ有スルヲ以テ異ナリトス. 此體長ノ差ヲ別トシテ考フレバ, *S. linearis* ト本種トハ其齒狀片ノ癒着ノ度ノ少ナキ點ニ於テ相類似ス. 又一方ニハ本種ハ *S. marchantioides* (Harv.) Fkbg. ノ狹キ體形ノモノト酷似スル所アリ, 然レドモ之レト異ナル點ハ齒狀片ノ癒合ノ度ノ彼ニ於テ多ク是ニ於テ少ナキニアリ.

由來日本海ノ水ハ太平洋側ノ水温ヨリ常ニ低ク且同一種ノ植物ニシテ

† *Symphyocladia* Fkbg., こざねも屬, ノ性質ハ第二卷 154 頁ニアリ.

兩洋ニ産スルモノ往々形狀及外貌ヲ異ニスルモノアルコトヲ考慮スルトキ、予ハ本種ノ植物ハ *S. linearis* Okam. 又ハ *S. marchantioides* ノ細キ形體ノモノ、矮小形トナリタル變種ニハアラザルカトノ疑ヲ存ス；然レドモ今ハ假ニ之ヲ新種トシテ發表ス。

第 CXCVI 圖版, 7-9 圖. 7: *Symphyocladia pennata* Okam, ひめこざね, ノ二個體；能生産, $\frac{1}{1}$.—8: 匍匐スル部分ノ頂端部, $\frac{8.3}{1}$.—9: 體ノ一部, $\frac{8}{1}$.

第 CXCVII 圖版, 9-13 圖. 9: 枝ノ一部, $\frac{8.3}{1}$.—10: 癒着シタル小枝ノ頂細胞, $\frac{3.5.3}{1}$.—11: 四分胞子ヲ有スル枝, $\frac{1.3}{1}$.—12: II 圖ノ一部ニシテ小枝ノ癒着シタル様子ヲ示ス, $\frac{8.7}{1}$.—13: 四分胞子ヲ有スル齒狀片, $\frac{8.3}{1}$.

Trichogloea Kützinger, 1849.

あけぼのもづく屬

HELMINTHOCLADIACEAE.

へにもづく科

體ハ絲狀, 側面ニ分岐シ, 粘柔ナリ. 體ノ中軸ヲ造レル絲ハ縱ニ集リテ走り, 其處此處ニ叉狀ニ分岐セル細キ絲狀細胞ヨリ成ル；此モノ髓部ヲナシ此ヨリ周圍ニ向テ放射狀ニ皮層ノ絲ヲ發出シ, 皮層ヲナス絲ハ屢々叉狀ニ分岐シ外部ノ方ニ進ムニ從テ漸次小サキ細胞トナル. 粘質ハ極メテ粘柔ニシテ, 髓ノ周圍ニ石灰質ヲ存ス. 成長部ハ扇狀ニ放射ス.—四分胞子ハ知ラレズ. 「カルボゴニウム」ハ皮層ノ絲ノ幼キ枝ノ頂端ニ形成セラル. 成胞絲ハ球狀ヲナシテ密ニ圍集シ放射狀ニ出タル分岐セル短キ絲ヨリ成リ, 其頂細胞胞子トナル. 仁ヲ圍ム特別ノ組織ナシ.

熱帶ニ産スル 2 種アルノミ. 一屬ノ名ハ *thrix* (絲) ト *gloia* (粘質) トヨリ成ル.

Trichogloea lubrica (Harv.) J. Ag.

あけぼのもづく

岡村 稱

第 CXC VII 圖版, 1-8 圖.

根ハ小サキ軟キ盤狀根ナリ。體ハ概ネ單條, 絲狀又ハ圓柱狀ニシテ軟弱, 基部細ク, 複羽狀ニ分岐シ, 不規則ニ互生ス。主軸ハ概ネ單條又ハ分岐シ, 下部ヨリ上部迄殆ド全部廣開セル枝ヲ存シ, 枝ハ主軸ト同ジ位太ク, 太サ約 1.5 mm アリ, 而シテ體ノ内部ヲ縦ニ走レル絲ヨリ成レル軸ハ輕ク石灰質ヲ存シ, 其直徑ハ體ノ皮層ノ厚サヨリモ細シ。枝ハ蠕虫狀ニシテ, 通常基部細カラズ, 頂端尖リ, 單條又ハ叉狀ニ分岐セル廣開セル小枝ヲ側面ヨリ分岐シ, 枝ハ長短不同ナリ。囊果ハ點狀ニシテ皮層中ニ存シ, 團塊ノ孢子ヨリ成ル。質ハ軟弱, 粘質, 滑澤ニシテ乾燥スルトキハ紙ニ固着ス。色ハ美キ紅色ニシテ淡水ニ浸ストキハ容易ニ褪色ス。

產地: 潮線間ノ岩石ニ生ジ, 低潮線附近ニ在リ。琉球 (Harv.), 野母崎, 八丈島。

第 CXC VII 圖版, 1-8 圖。1: *Trichogloea lubrica* (Harv.) J. Ag., あけぼのもづく, ノ體, 八丈島産, $\frac{1}{1}$ 。—2: 體ノ透視縱斷面, $\frac{22}{1}$ 。—3: 縱斷面ノ一部, $\frac{48}{1}$ 。—4: 囊果及皮層, $\frac{220}{1}$ 。—5: 胎原列(トリコジーンハ自然ニハ屈曲セズ) $\frac{567}{1}$ 。—6: 囊果, $\frac{353}{1}$ 。—7-8: 囊果ノ縱斷及橫斷面ノ一部ヲ圖式ニテ示ス。

Plocamium costatum (J. Ag.) Hook. et Harv.*

きざみゆかり

岡村 稱

第 CXC VIII 圖版, 1-4 圖.

今唯一個ノ標品アルノミ。體ハ扁平, 細キ線狀, 薄キ膜狀ニシテ, 約 7 cm. 高ク, 幅僅ニ 1 mm. ヲ有シ, 輕ク雁木様ニ屈曲ス。枝ハ兩縁ヨリ出デ, 2-4 回複羽狀ニ分岐シ, 互生ニシテ直立一廣開ス。下部ノ枝ハ上部ノ枝ヨリ稍長ク漸次上方ニ短シ, 故ニ枝態ハ稍繖房狀ノ輪廓ヲ有ス; 枝ハ總

* *Plocamium* Lyrbye, (ゆかり屬, ノ性質ハ第三卷 3 頁ニ在リ)。

テ二個ヅ、互生ス（即チ一方ノ側ヨリ二個出デ之ト互生シテ他ノ側ヨリ又二個ヅ、出ヅ）；其二個ノ内下ノ枝ハ常ニ單條ナレドモ、上部ノモノハ更ニ分岐ス；其單條ナルモノハ 2-3 mm. 長ク、基部廣クシテ上端細ク、枝ノ下部又ハ中央部ヨリ出ルモノハ廣開スレドモ、上部ノモノハ多少内方ニ屈曲ス。此二個ヅ、出ル下部ノ單條ノモノ、外縁ハ顯微鏡的ニ小ナル鋸齒狀ノ突起ヲ有ス。四分孢子ヲ有スル枝ハ複叉狀ニ分岐シテ星形ニ團聚シ短キ柄ヲ有ス；其各枝ハ稍披針狀又ハ線狀ノ小枝ヨリ成リ、枝ノ最末位ノ小齒狀片ヨリ變成ス。

產地：紅頭嶼。

此植物ハ中肋ヲ缺クコト及基部莖狀ヲナサルコトニ於テ原種ト異ナルガ如ク、體ノ外觀、枝態ノ容子、體質ノ工合等普通ノヨカリ、Pl. abnorme H. et H. (第 CI 圖版)、ニ酷似スレドモ、唯二個ヅ、出ル齒狀片ノ單條ノモノ、外縁ニ鋸齒アルコトヲ以テ異ナリトス。本植物ハ多分本種植物ノ分布ノ最北限ニ生ズル一形態ナランカ、從テ體ハ小サク、質ハ纖弱、薄クシテ膜質ヲナシ、中肋ハ不明トナレルモノナラン。蓋シ或ハ Pl. abnorme ト Pl. costatum トノ間生ナランカ。

第 CXC VIII 圖版, 1-4 圖. 1: *Plocamium costatum* (J. Ag.) H. et H. きざみヨカリ、ノ體, $\frac{1}{1}$.—2: 枝ノ上部, $\frac{22}{1}$.—3: 成實葉, $\frac{48}{1}$.—4: 成實葉; b, 柄, $\frac{48}{1}$.

***Dasyphila plumarioides* Yendo †**

おきしのぶ 岡村 稱

第 CXC VIII 圖版, 5-11 圖.

體ハ絲狀、下部少シク稍圓柱狀ノ莖ノ如ク成リ、漸次上方ニ扁壓シ、屢不規則ニ互生シ、枝ハ廣開シ、稍扇狀ニ擴ガル。枝ハ美シク羽枝ヲ存ス (10-11 圖 a, b). 羽枝ハ對生シ、早晚有限成長ヲナシ、Callithamnion 狀ナリ、即チ一列ノ細胞ヨリ成ル。羽枝ハ各關節ヨリ生ズル小羽枝ヲ互生ス。

†*Dasyphila* Sonder, たごのり屬, ノ性質ハ第二卷 134 頁ニ在リ。

對生セル羽枝ノ一ハ長キ枝ニ伸ルコトアリテ (10-11 圖, *h, l*), 枝ハ通常各第二ノ節ヨリ出ヅ (即チ一對ノ羽枝ヲ隔テ、出ヅ, 10 圖); 然レドモ此規則ハ往々亂ル、コトアリテ 11 圖 *a, b*, ニ示ス如ク 1 乃至 3 關節ヲ隔テ、出ル如キ不規則ナル場合アリ。枝ノ表面ニハ單列ノ細胞ヨリ成レル二條ノ纖弱ナル絲又ハ毛ガ各節ヨリ出ルヲ見ル (第 7 圖)。此等ノ毛ハ實際一列ノ細胞ヨリ成レル單條ナル枝ニシテ 2-4 關節ヨリ成リ, 未發達ノ狀態ニ停マレルコトハ極メテ幼キ枝ニ於テ視ルコトヲ得 (第 6 圖), 其枝ハ未ダ皮層細胞ヲ有セザル一列ノ細胞ヨリ成レルモノナリ。枝ノ横斷面ニハ一條ノ大ナル中軸細胞アリテ其周圍ニ 6 個ノ稍大ナル細胞ヲ存ス, 其内枝ノ兩縁ノ處ニ在ル 2 個ノモノハ羽枝トナリ, 他ノ 4 個ハ未發ノ狀態ニアルカ又ハ數個ノ關節ヨリ成レル單列ノ毛ノ如キ枝ト成ル。皮層ハ側枝ノ基部ノ細胞ヨリ起ル根様細胞トシテ形成セラル。四分胞子ハ小羽枝ノ頂端ノ細胞ニ形成セラレ, 球狀ニシテ三角錐形ニ分裂ス。

產地: 紅頭嶼。

第 CXC VIII 圖版, 5-11 圖。5: *Dasyphila plumarioides* Yendo, おきしのぶ, ノ體, $\frac{1}{1}$ 。—6: 若キ枝ノ上部, $\frac{353}{1}$ 。—7: 羽枝々單列細胞ノ枝, $\frac{220}{1}$ 。—8: 羽枝ノ一個, $\frac{353}{1}$ 。—9: 枝ノ横斷面, $\frac{220}{1}$ 。—10-11: 枝ノ出方ノ圖式説明; *h*, 無限成長ノ枝; *b, l*, 有限成長ノ枝即チ羽枝。

Gelidium crinale* (Turn.) Lam. f. *latifolium* n. f.

いとてんぐさノ一型

第 CXC VIII 圖版, 12 圖。

體ハ線狀, 匍匐シテ根ヲ出セル匍枝ヨリ直立シ, 下部絲狀ニシテ枝ナク, 體ノ長サ 5-6 cm., 上部直ニ細線狀ニ擴ガリ, 幅 1-1.5 mm. ニシテ同様ノ形セル枝ヲ分岐ス; 枝ハ不規則ニ互生シ, 密聚シ又ハ散在ス。枝ハ基部急ニ又ハ漸次ニ細クナリ鈍圓頭ニ終ル。

產地: 相州鎌倉ノ淺所(東氏)

**Gelidium*, Lam., てんぐさ屬, ノ性質ハ日本海藻圖說第五頁ニ在リ。

稍廣キ細線狀ノ枝ヲ有スルコトヲ以テ模範種ト區別セラル。

第 CXC VIII 圖版, 12 圖: *Gelidium crinale* f. *latifolium* n. f., いとてんぐさノ一型ノ體, $\frac{1}{1}$.

Homoeostrichus J. Ag. 1894.

やぶれあふぎ屬

DICTYOTACEAE

あみちぐさ科

體ハ扁平, 傾臥シ又ハ直立シ, 單條又ハ數回分裂シ, 上方ハ多少明ニ扇狀ヲナス。體ノ扁平ナル部分ハ數層ノ細胞ヨリ成リ, 内部ノ各個ノ細胞ニ對シテ大サ及形狀トモ同様ナル各一個ノ皮層細胞アリテ之ヲ表面ヨリ見ル時ハ放射狀ニ列ス。子囊群ハ表面ニ隆起シ, 往々縦ニ放射狀ニ列シ, 倒卵形ノ孢子ト堅ニ稍棍棒狀ヲナセル關節セル「バラネマタ」トヨリ成リ, 群ヲ蔽ヘル被膜ハ之ヲ存セズ。一屬ノ名ハ *homoios* (同様) ト *thrix*, *trichos* (絲又ハ毛) トヨリ成ル。

5 種アリテ喜望峯及オーストラリアニ産ス。

Homoeostrichus Sinclairii (H. et H.) J. Ag.

やぶれあふぎ

岡村 稱

第 CXCIX 圖版, 1-4 圖。

體ハ毛茸アル圓錐狀根ヨリ立ち, 下部ハ長キ細キ部分ニ分レ, 其部ハ毛茸ヲ以テ蔽ハル、コトアリ又ハ毛茸ナク, 其上部ハ多少裂ケタル廣キ又ハ狹キ楔形ノ葉ニ展ガル。體ノ下部ハ時ニ大部分厚ク毛茸ヲ存スルコトアリ。葉ハ楔形ニシテ, 下部ハ細ク長キ柄トナリ, 分裂セズシテ全形又ハ稍羽狀若シクハ放射狀ニ裂ケタリ。毛茸ハ體ノ外層 (即チ皮層) ノ細胞ヨリ發ス。

產地: 琉球。

第 CXCIX 圖版, 1-4 圖。 1: *Homoeostrichus Sinclairii* (H. et H.) J. Ag. ノ體, $\frac{1}{1}$ 。—2: 體ノ横斷面, $\frac{3.3}{1}$ 。—3: 體ノ横斷面ノ一部, $\frac{3.5.3}{1}$ 。—4: 毛茸, $\frac{8.3}{1}$ 。

Desmarestia aculeata (L.) Lamour.*

とげうるしぐさ 岡村 稔

第 CXCIX 圖版, 5-9 圖.

根ハ小サキ扁平ナル盤狀根ナリ。體ハ長大, 線狀, 絲狀, 稍圓柱狀ノ莖ヲ有シ, 扁壓, 硬ク, 下部ヨリ上部マデ埋在セル中肋ヲ以テ貫通シ, 密ニ複羽狀ニ互生シ, 枝ハ兩縁ヨリ出ヅ, 而シテ最末ノ小羽枝ハ刺狀又ハ錐狀ナリ。主枝ノ縁邊ハ刺狀突起即チ最末小羽枝ノ脱落シタル痕ノ爲ニ往々小サキ點狀ノ突起ヲ存ス。色ハ暗褐色。質ハ硬クシテ乾燥スル時ハ紙ニ附着セズ。

產地: 樺太。

第 CXCIX 圖版, 5-9 圖。5: *Desmarestia aculeata* (L.) Lam., とげうるしぐさ, ノ體, $\frac{1}{1}$.—6-7: *a*, 枝; *b*, *a* ノ一部, $\frac{7}{1}$.—8: 枝ノ幅廣キモノ, $\frac{1}{1}$.—9: 老枝ノ一部, 廓大。

Caulerpa Freycinetii C. Ag. var. **pectinata** Web. v. Bos.†

いれづたノ一品種

第 CC 圖版, 1 圖

匍枝ハ大抵太ク, 強ク, 圓柱狀, 匍匐シ, 裸出ス(毛等ナキヲ云フ)。體ハ圓柱狀又ハ基部ノ方ニ於テ稍扁壓シ, 上方ニ直ニ扁平トナリ, 線狀, 叉狀ニシテ捻レズ, 且ツ所々狹ク又ハ廣クナルコトナシ, 而シテ副枝ヲ出シ, 兩縁ハ櫛齒狀ヲナス。齒ハ短クシテ細カク, 互ニ相接近シテ出ヅ。

產地: 紀州椒村。

第 CC 圖版, 1 圖: *Caulerpa Freycinetii* C. Ag. var. *pectinata* Web. v. Bos. ノ體, $\frac{1}{1}$.

**Desmarestia*, Lam., うるしぐさ屬, ノ性質ハ第一卷, 190 頁ニ在リ。

†*Caulerpa* Lam., いれづた屬, ノ性質ハ第三卷, 19 頁ニ在リ。

Caulerpa cupressoides C. Ag. var. **typica** Web. v. Bos.

びやくしんづたノ一品種

第 CC 圖版, 2 圖.

今唯一個ノ標品アルノミ. 匍枝ハ太ク, 圓柱狀ニシテ裸出ス. 體ハ基部圓柱狀ニシテ上方ニ扁壓ス. ラメンタ (即チ羽狀ニ出ル 缺刻) ハ兩縁ヨリ出デ其處此處ニ三列ヲナシ, 稍小舟狀ニシテ短ク, 直立シ又ハ少シク廣開ス.

產地: 紀州椒村.

第 CC 圖版, 2 圖: *Caulerpa cupressoides* C. Ag. var. *typica* Web. v. Bos. ノ體ノ一部, $\frac{1}{1}$.

Caulerpa cupressoides C. Ag. var. **lycopodioides**
f. **elegans** Web. v. Bos.

びやくしんづたノ一品種

第 CC 圖版, 3 圖.

匍枝ハ太ク, 強ク, 裸出シ, 圓柱狀ナリ. 體ハ高ク挺出シ, 圓柱狀ニシテ下部太ク, 枝ヲ出シ, 枝ハ基部ニ「ラメンタ」ナシ. ラメンタ (橢齒狀ノ枝) ハ兩縁ヨリ出デ, 稍小舟狀ヲナシ, 枝ノ軸ノ幅ノ 2-3 倍長シ.

產地: 紀州椒村.

第 CC 圖版, 3 圖: *Caulerpa cupressoides* C. Ag. var. *lycopodioides* f. *elegans* ノ體ノ一部, $\frac{1}{1}$.

Derbesia Solier つゆのいと屬.

DERBESIACEAE

つゆのいと科

體ハ實ナキ狀態ニテハ單細胞ニシテ, 單條又ハ不規則ニ若クハ叉狀ニ分岐シ, 莖及葉ノ如キ明ナル區別ヲ有セズ. 游走子ハ體ノ側面ニ特ニ形成セラレタル子囊中ニ形成セラレ, 他ノ部ト隔膜ヲ以テ分タル. 游走子ハ大

ニシテ無色ナル前端ノ基部ニ環狀ニ纖毛ヲ冠ス。一屬ノ名ハ佛國ノ海藻學者 E. Derbes 氏ノ名ニ因ル。

S-10 種アリテ石又ハ他ノ海藻上ニ存シ、海産ニシテ歐州、北米、オーストラリアニ知ラレタリ。

Derbesia Lamourouxii (J. Ag.) Sol.

つゆのいと 岡村 稱

第 CC 圖版, 4-8 圖

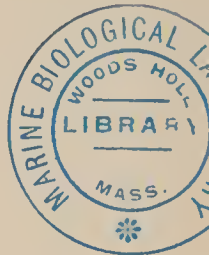
體ハ絲狀、毛細狀、密ニ叢生シテ團塊ヲナシ、高サ 5-6 cm. アリ。絲ハ 170-615 μ 太ク(乾燥標品ニテ)、下部ヨリ根ヲ出シ、枝ナクシテ殆ド單條又ハ不規則ニ小サキ枝ヲ出ス。子囊ハ球狀ニシテ直徑約 350 μ ア、無柄(或ハ短キ柄アリ)、單獨又ハ數個相接シテ出デ又ハ一方ノ側ニ偏在ス。

產地：紀州椒村。

第 CC 圖版, 4-8 圖。 4: *Derbesia Lamourouxii*, (J. Ag.) Sol., つゆのいと, ノ叢, $\frac{1}{1}$ 。—5: 子囊ヲ有スル枝, $\frac{1}{1}$ 。—6: 枝ノ上部ヨリ出タル根, $\frac{48}{1}$ 。—7: 子囊, $\frac{48}{1}$ 。

正 誤

78 頁下ヨリ七行: *Cladophoropsis fasciculatus* ハ *Cl. coriacea* ノ誤。



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BY

K. Okamura *Rigakuhakushi.*

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f. am'corum Weber-van Bosse	びやくしんづた
Caulerpa Webbiana Mont. f. disticha Weber-van Bosse	こけいわづたノ一品種

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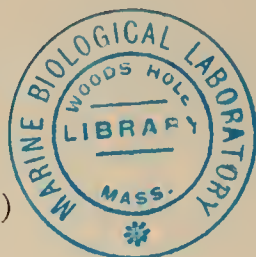
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Vol. IV. No. II.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. II. (PL. CLVI—CLX.)

Helminthocladia australis Harv.
Odonthalia semicostata (Mert.) J. Ag.
Nemalion vermiculare Suring.
Actinotrichia rigida (Lam.) Decne.
Callophyllis crispata Okam.
Hypnea cervicornis J. Ag.
Chondrus elatus Holm.

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う み ぞ う め ん
そ で が ら み
ひろはのとさかもどき
か づ の い ば ら
こ と ぢ つ の ま た

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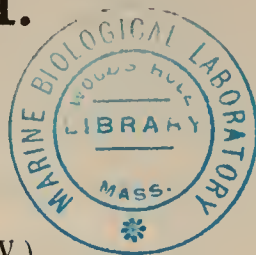
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ICONES OF JAPANESE ALGÆ.

Vol. IV. No. III.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. III. (PL. CLXI—CLXV.)

Gracilaria Chorda Holm.

Halymenia Harveyana J. Ag.

Microcladia dentata Okam. sp. nov.

Elachista fucicola (Vell.) Aresch. α typica Rosenv.

Chnoospora obtusangula (Harv.) Sond.

Coilodesme Cystoseirae (Rupr.) Setch. and Gard.

Ulva conglobata Kjellm. and f. densa Kjellm.

Codium tenue Kuetz.

つ る し ら も
い そ の は な
こ す ぢ さ え だ
な み ま く ら
む ら ち ど り
ゑ ぞ ふ く ろ
ぼ た ん あ を さ
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ICONES OF JAPANESE ALGÆ.

Vol. IV. No. IV.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. IV. (PL. CLXVI—CLXX.)

Heterosiphonia pulchra (Okam.) Fkbg.

Heterosiphonia japonica Yendo.

Delesseria crassifolia Rupr.

Cladophoropsis fasciculatus (Kjellm.) Börg.

Ulva pertusa Kjellm.

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いそはぎ
このはのり
みどりげ
あなあをさ

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BY

K. Okamura *Rigakuhakushi.*



Contents of No. IV. (PL. CLXVI-CLXX.)

Thorea ramosissima Bory.

Bangia fusco-purpurea (Dillw.) Lyngb.

Erythrophyllum Gmelini (Grun.) Yendo.

Scinaia Cottonii Setch.

Tylotus lichenoides Okam. sp. nov.

Rhobdonia robusta J. Ag.

Caulerpa scalpelliformis (R. Brown) Ag. var. *denticulata*
(Decsn.) Weber.

ち す じ の り
う し け の り
ゑ ぞ と さ か
ひ ら ふ さ の り
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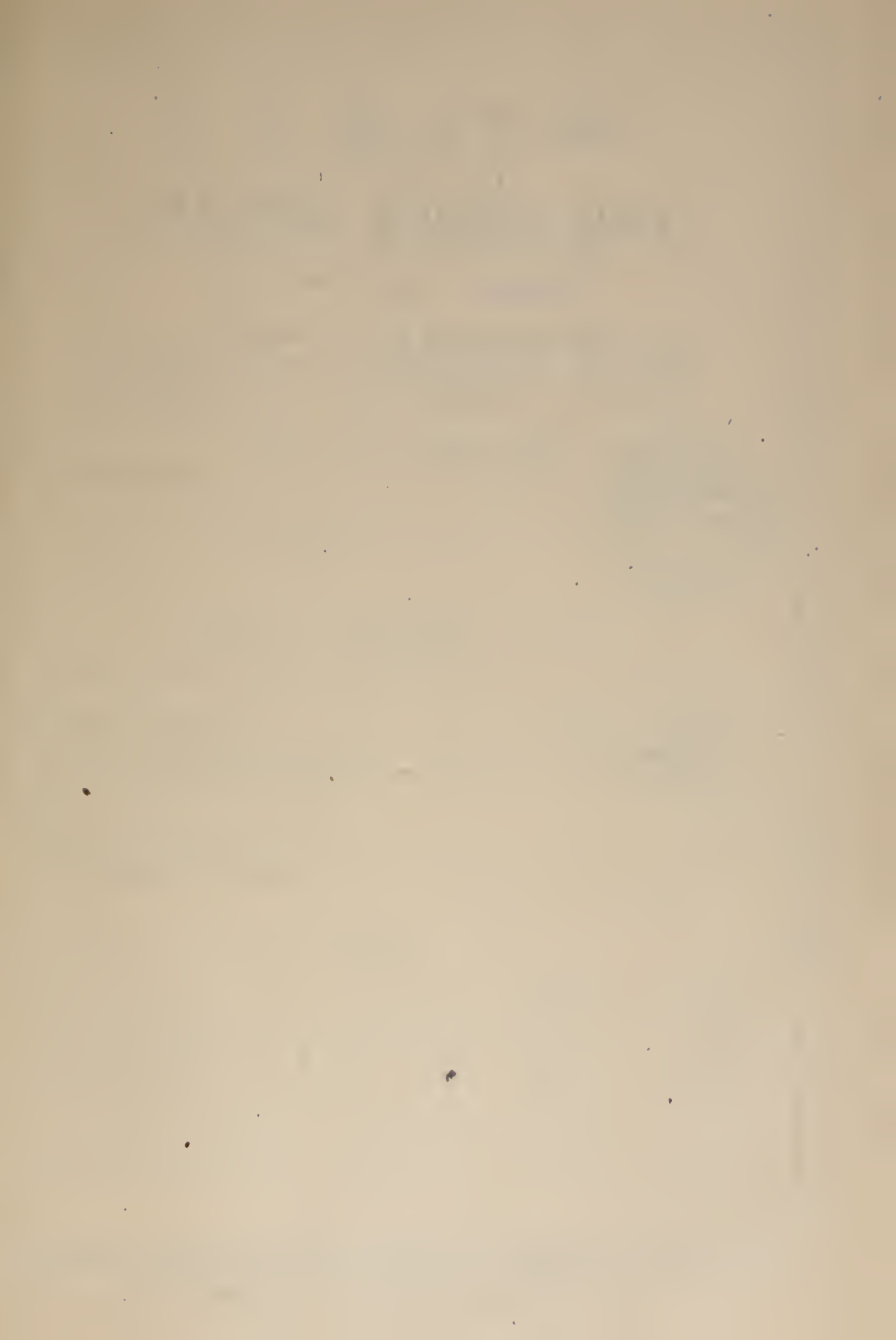
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ICONES OF JAPANESE ALGÆ.

Vol. IV. No. VI.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. VI. (PL. CLXXVI—CLXXX.)

Halymenia dilatata Zanard.

Sarcodia Montagneana (H. et H.) J. Ag.

Champia expansa Yendo.

Ceramium tenerrimum (Mart.) Okam.

Ceramium paniculatum Okam.

Dilsea edulis Stackh.

ふ い り ぐ さ
あ つ ば の り
うすばわつなぎさう
け い ぎ す
は り い ぎ す
あ か ば

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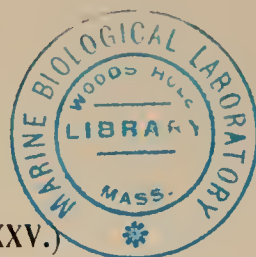
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Vol. IV No. VII.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. VII. (PL. CLXXXI—CLXXXV.)

Pikea californica Harv.

Gymnogongrus flabelliformis Harv.

Euptilota articulata (J. Ag.) Schm.

Asparagopsis hamifera (Hariot) Okam.

Chrysomenia Uvaria (L.) J. Ag.

Pterosiphonia bipinnata (P. et R.) Falkenb.

Pterosiphonia articulata (J. Ag.) Setch. and Gardn.

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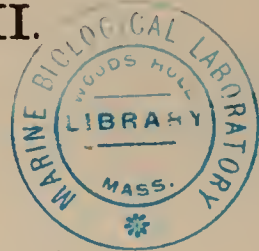
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Vol. IV. No. VIII.

BY

K. Okamura *Rigakuhakushi.*



Contents of No. VIII. (PL. CLXXXVI—CXC.)

Rhodomela subfusca (Woodw.) C. Ag.
Nemalion multifidum (W. et M.) J. Ag.
Rhodomela Larix (Turn.) C. Ag.
Roschera glomerulata (C. Ag.) Web. v. Bosse
Antithamnion Plumula (Ellis) Thur.
Chondrococcus Hornemanni (Mert.) Schmitz
Chondrococcus japonicus (Harv.) Okam.

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つくものり
ふちまつも
いとくづぐさ
よつがさね
ほそばなみのはな
なみのはな

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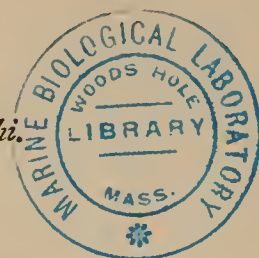
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Contents of No. IX. (PL. CXCI—CXCIV)

Ahnfeltia concinna J. Ag.

Delesseria Middendorffii Rupr.,
tetrasporic sporophylls of.

Laurencia pinnatifida (Gm.) Lam.

Laurencia obtusa (Huds.) Lam.

Sporochnus radiformis (R. Br.) C. Ag.

Sporochnus scoparius Harv.

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ながこのはのり
四分胞子托
は ね そ い
み つ で そ い
た ま け や り
け や り

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Vol. IV. No. X.

BY

K. OKAMURA *Rigakuhakushi.*

Contents of No. X. (PL. CXCVI—CC)



Odonthalia ochotensis (Rupr.) J. Ag.
Symphyocladia pennata Okam. sp. nov.
Trichogloea lubrica (Harv.) J. Ag.
Plocamium costatum (J. Ag.) H. et H.
Dasyphila plumarioides Yendo.
Gelidium crinale (Turn.) Lam. f. latifolium n. f.
Homoostrichus Sinclairii (H. et H.) J. Ag.
Desmarestia aculeata (L.) Lam.
Caulerpa Freycinetii C. Ag. var. pectinata Web. v. Bos.
Caulerpa cupressoides C. Ag. var. typica Web. v. Bos.
„ var. lycopodioides f. elegans.
Derbesia Lamourouxii (J. Ag.) Solier.

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ひ め こ ざ ね
あけぼのもづく
き ざ み ゆ かり
お き し の ぶ
いとてんぐさノ一型
やぶれあふぎ
とげうるしぐさ
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